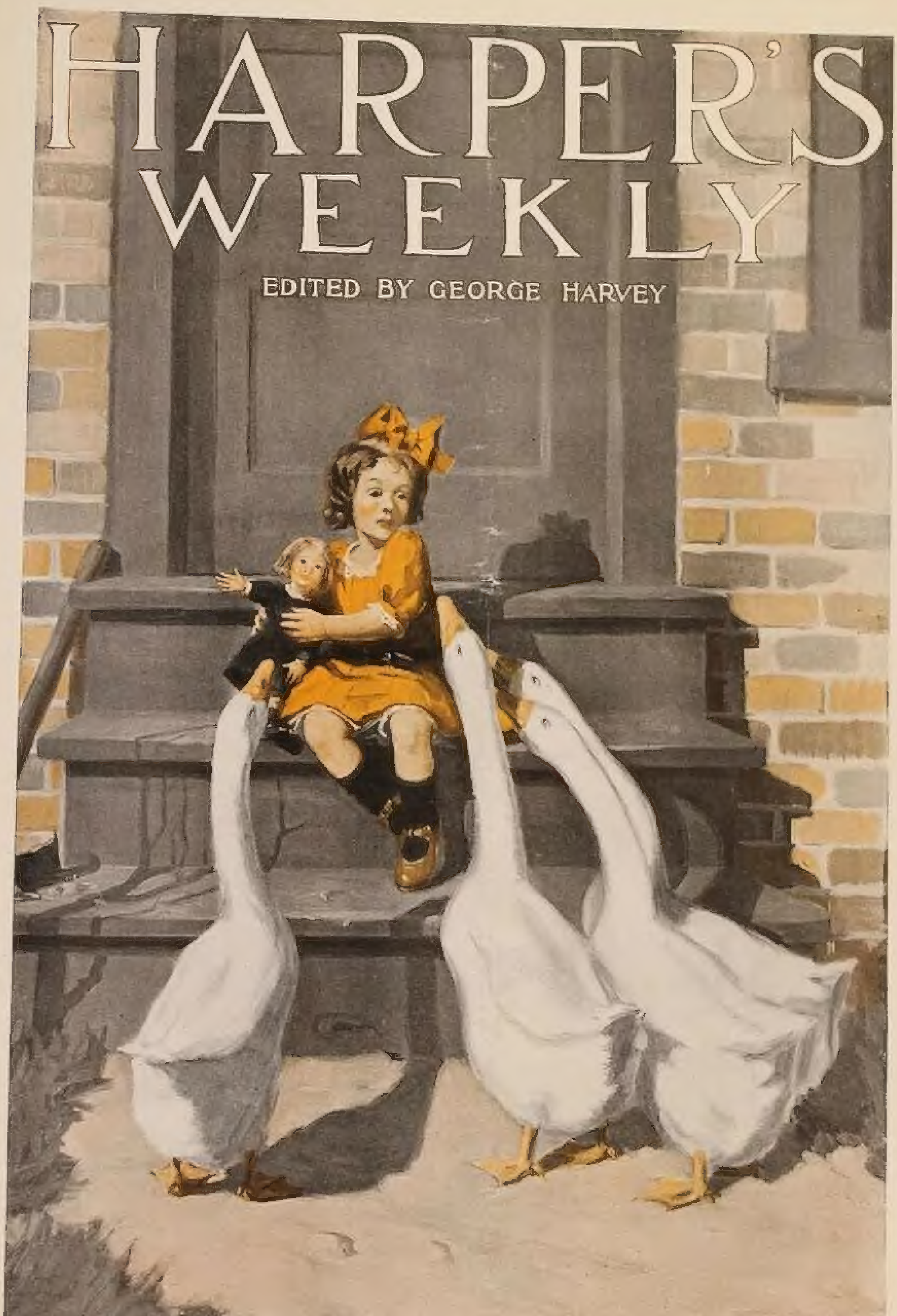
HARPER'S WEEKLY

EDITED BY GEORGE HARVEY



August 19 1911 HARPER & BROTHERS, N. Y. Price 10 Cents

Envy Not Thy Neighbor

Who, seeing that LIFE is beginning to issue inside pictures in color, betaketh himself forthwith to his local bank and, drawing a One Dollar bill from his store, therewith attacheth his name and address to a LIFE coupon, and straightway is rewarded for his slight trouble by a unique sensation.

He, meseemeth, is ahead of thee one week, but thou mayest catch up at once if thou followest his example.

The coupon below hath been thoughtfully placed on this page for thy especial benefit.

Life is Now Selling

Like a

House Afire

If you are already a subscriber what more gracious office could you perform for a friend than to send him LIFE for three months? It will remind him pleasantly of you every week during this period.

On all News-stands
Every Tuesday
Ten Cents

Enclosed find One Dollar (Canadian $1.13, Foreign $1.26). Send LIFE for three months to

Open only to new subscribers; no subscription renewed at this rate. This offer is net.

LIFE, 17 W. 31 Street, New York

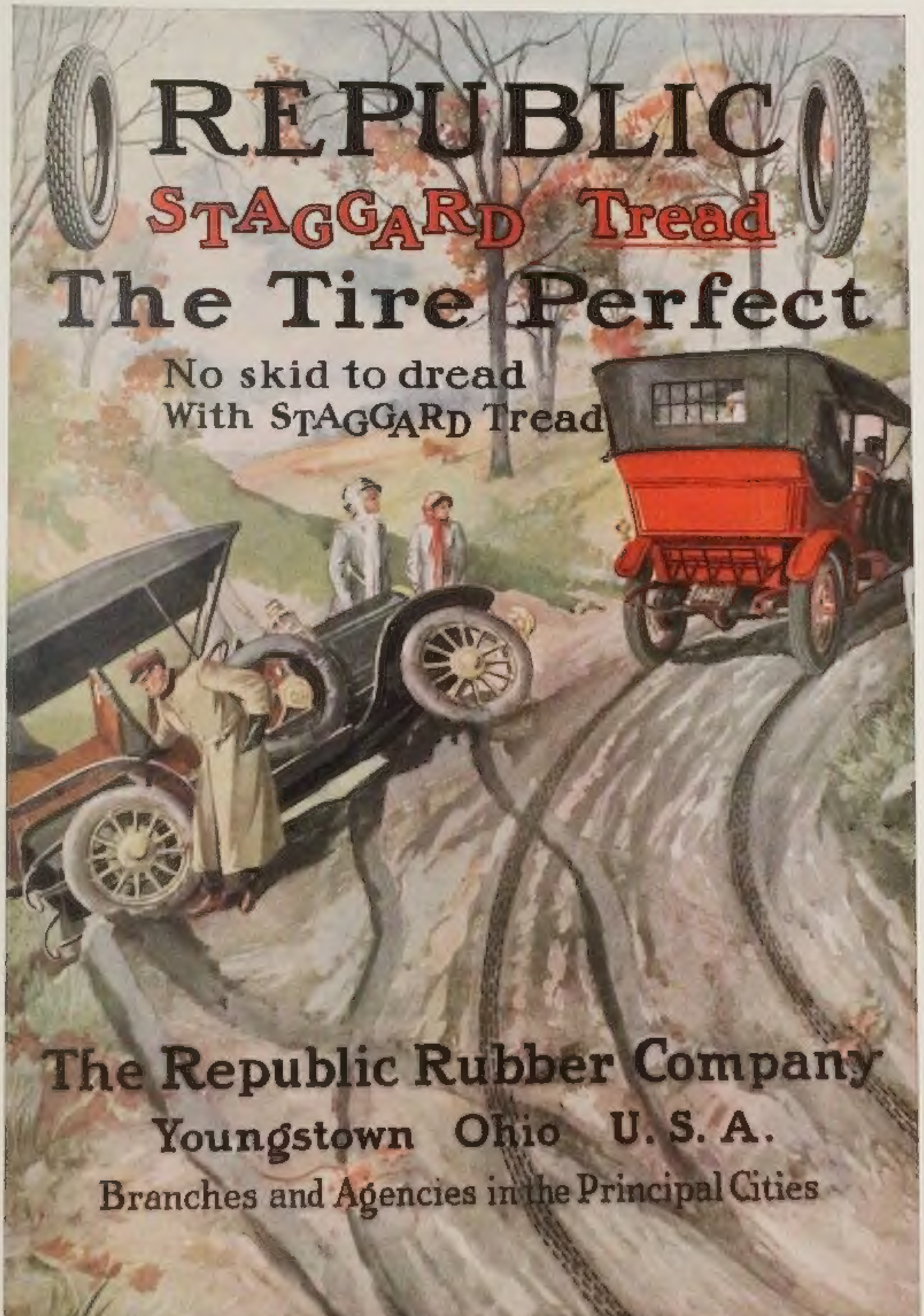
Subscription $5.00 *Canadian $5.52* *Foreign $6.04*

REPUBLIC

STAGGARD Tread

The Tire Perfect

No skid to dread
With STAGGARD Tread



The Republic Rubber Company

Youngstown Ohio U. S. A.

Branches and Agencies in the Principal Cities

VIRGIN SOIL READY FOR THE PLOW
J. CRAMER'S 1911 CORN CROP
10 ACRE ORCHARD, ROCHESTER, OWNED BY JOE EGGLER, SECRETARY ROCHESTER COMMERCIAL CLUB
W.H. LOOMIS' 7 IB BASKETS OF LOGAN BERRIES $300 PER ACRE PROFIT

Life in the Puget Sound Country

With Particular Reference to

Rochester and Rochester Orchard Tracts

A strong appeal to the person of small means based on actual facts and unusually fine, natural conditions admirably adapted for the ideally working out of a comfortable and prosperous home. Look at the pictures on the left hand margin of this page, which were made last week on the ground, and you will get an exact idea of what is going on today at Rochester. Rochester property owners are enthusiastic boosters for the section because they are contented and prospering.

Soil—The soil has been examined by experts and the reports have been that it is absolutely perfect for producing the crops itemized below: Mr. F. W. Nye, expert on soil and poultry raising, is located at Rochester and says the conditions there are absolutely perfect for poultry raising and he is today making big profits from this industry and expects to double his income yearly. W. H. Loomis, located on a piece of land two miles from our property, took $300 worth of loganberries off one-half an acre of land the first season. He says he will have no trouble in doubling this next year. Rochester acres are ready for the plow right now. No stumps to be blown out; no rocks to be hauled off the land; no hills to be leveled down and irrigation is not necessary. You can move on to the land at Rochester one day and start to work preparing your soil the next.

Transportation—This section is served by four railroads: The Great Northern, Northern Pacific, Oregon & Washington and the Chicago, Milwaukee and Puget Sound. No shrewd investor has to be told twice what transportation of this class means to any district.

Location—About half way between Seattle and Portland, six miles from Centralia, a town of 10,000 population and which is growing more rapidly than any other town in the State of Washington; ten years ago Centralia had only 1000 population. Think, Rochester is at the junction of three railroads.

Markets—The cities of Tacoma, Portland, Aberdeen and Seattle can consume all of the products raised at Rochester at high prices every month in the year every year. Apples, pears, small fruits, garden truck and poultry can be put on the trains at Rochester and within three and one-half hours be in the markets of Portland, Seattle and Tacoma.

Products—There is no section on the American continent that can raise finer apples, cherries, pears, berries of every description and truck gardening. Mr. Nye, who is a leading poultry raiser at Rochester, has proven beyond question of doubt there is big money in this industry at Rochester. Dairying is another big industry at Rochester. Cream, milk and butter sell at high prices in Tacoma, Portland, Seattle and Aberdeen and the cost of transportation is cheap. Anyone with ordinary intelligence can become wealthy making a business of dairying at Rochester. Rochester orchard tracts are a proven success and the ground can be made to pay for itself from the first year's crops.

Climate and Scenery—Perhaps it is somewhat difficult to believe for the person not on the ground that the Puget Sound country has the finest all-year climate to be found on the globe. The summer days are warm enough to bring to an absolute state of perfection all the products of the soil and the summer nights are cool enough to make blankets comfortable. The winter is mild enough for stock to range out all of the time and the grass is green and flowers blooming from September to April when the spring months bring them forth with greater magnificence and profusion. If you do not believe the above statements why don't you come and see for yourself? Surely there must be thousands of readers of this publication who would be delighted to get such a home as we offer at Rochester where all the climatic and industrial conditions combine to make life contentment and prosperity. The more closely you investigate Rochester and Rochester Orchard Tracts the more pleased we will be for we have yet to find anyone who inspects this property to refuse to buy. Bear in mind that Rochester is not an ordinary proposition, but it is the very best of its kind to be found. In our ten years of experience of furnishing homes to thousands of people in the Puget Sound country it has been and always will be our policy to supply them the very best money can buy at prices and terms within the reach of all. $100 per acre on terms to suit every purchaser is what we can do for you right now at Rochester. There is elbow room, happiness and fortune for a thousand new people at Rochester, and we want every reader of this publication who is interested in getting a home in Puget Sound country to write us today stating his financial condition fully and we know we are in position to help him. It does not require much money to get started on Rochester Orchard Tracts, and this is your opportunity to allow this big, strong company to start you on the road to absolute independence, health and wealth. Do not delay. Get in touch with us. There is no time like the present and there never will be. We will take great care and pains with each individual purchaser and after the purchaser is located at Rochester it is the policy of our company to give him every assistance within our power. If you want a really first-class home and are desirous of transacting business with a high-grade company whose methods are honest, write today for our literature and further information by personal letter.

American Home Investment Co.

Puget Sound Pioneer Home Builders

Mehlhorn Building **Seattle, Washington**

HARPER'S WEEKLY

EDITED BY
GEORGE HARVEY

Chas. A. Mochellan '10

March 11 1911 HARPER & BROTHERS, N. Y. Price 10 Cents

The Heights at the Top

are always commanded by those who produce the best. Over fifty years of continued ***Quality*** and ***Purity*** made ***"The Old Reliable"***

Budweiser

the unchallenged King of All Bottled Beers. Its world-wide reputation is due to its thorough ageing, mildness and exquisite taste which helped to win its ***Popularity Everywhere.***

Bottled only (*with corks or crown caps*) at the

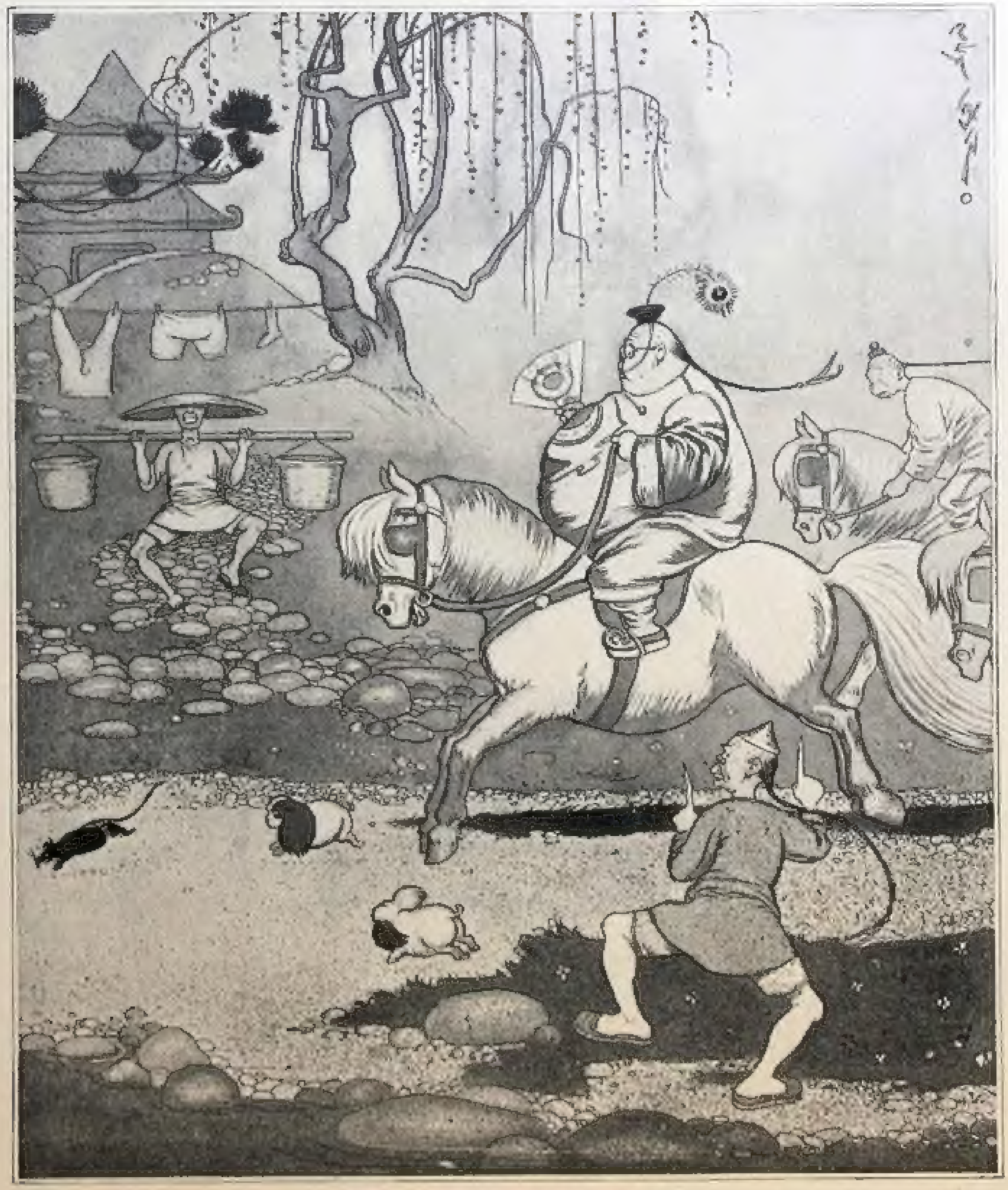
Anheuser-Busch Brewery

St. Louis, Mo.

ABBOTT'S BITTERS

Makes the best cocktail. A pleasing aromatic with all Wine, Spirit and Soda beverages. Appetizing, healthful, to use with Grape Fruit, Oranges, Wine Jelly. At Wine Merchants or Druggists. Sample by mail, 25c in stamps.

C. W. ABBOTT & CO., Baltimore, Md.



RIDING TO HOUNDS FOR "CHOP SUEY" IN CHINA

The Christmas

Pictorial Review

Fifteen Cents

December 1911

The Pictorial Review Company New York

HER
NUMBER

LIFE

PRICE, 10 CENTS
VOL. LVIII, NO. 1499 JULY 20, 1911
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CIRCUMSTANTIAL EVIDENCE.

PRICE, 10 CENTS
VOL. LVII, NO. 1478 FEBRUARY 9, 1911

Life

"LONG DISTANCE MAKES THE HEART GROW FONDER."

Chelan River, source of water supply for Chelan Falls Orchards

Grow Red Apples

on Irrigated Washington Land

THE Chelan Falls Orchards meet all the conditions to insure an ideal apple growing district high-grade commercial quality of fruit; sureness of crop; facilities for marketing; pleasant community location. ¶ This tract is located on the Columbia River just north of the famous Wenatchee Valley—noted over the world for the perfection of its apples, the absolute certainty of crop, the marvelous acreage yields, and the surprising high prices which it commands as fancy fruit.

¶ The Chelan Falls Orchards have perfect air drainage through the Columbia River gorge, and the heavy winter snowfall checks the budding of the fruit until there is no danger from frosts. The cool nights and almost continuous sunshine gives high color and lasting qualities to the fruit. ¶ The Chelan Falls Orchards are adjacent to Chelan Falls, which is reached by steamboat navigation on the Columbia River, and is on the line of the Great Northern Railroad building north from Wenatchee to Oroville. The Columbia River will eventually be open for navigation to the ocean, and the Hill water-grade railroad to the sea will also follow its north bank. Just a mile back of Chelan Falls is the Great Northern site where 100,000 H. P. is to be developed on the Chelan River. The beautiful sixty mile long Chelan Lake, four miles from Chelan Falls, will be used as a natural reservoir for the great power project. This lake extends almost to the summit of the Cascades and is one of the scenic wonders of the world.

¶ The Chelan Falls Orchards consist of 600 acres, 300 acres of which are planted to two-year old apple trees of the best commercial varieties. A gravity irrigation system will replace the irrigation pumping plant early in 1912. These orchard tracts may be purchased at reasonable prices and on easy term. For further information please address

Geo. D. Brown, ***Chelan Falls, Washington***
or Chelan Falls Commercial Club
Chelan Falls, Washington

FRESH FROM THE FIELD

C. V. Cooper, Manager for this Company, has just returned from our plantation in Mexico and reports everything in splendid shape. All who may be interested in Rubber Land Investments will be pleased to receive from Mr. Cooper, direct, a personal statement of the result of his trip. This will be mailed upon application to the Company.

Remember, this Company has no stock for sale. It offers you the opportunity of buying the land outright, in consideration of which, the Company agrees to cultivate, harvest and market the crop, giving you an annual return upon your investment that will exceed the dividends you are usually accustomed to receiving.

(Complete Information about the actual results already obtained by cultivation of Mexican Rubber on our own property may be had upon request. Write today for our plan and report of Mr. Cooper. :: ::)

The Castilloa Rubber Plantation Co.

813-814 CHAMBER OF COMMERCE
PORTLAND, OREGON

CHOICE POULTRY FARMS IN BRITISH COLUMBIA

There is no better farming land in British Columbia than that in the Cloverdale District in the famous Fraser Valley. This is a locality which is showing great activity and where the land is yielding big returns.

Poultry and fruit raising either on a small or large scale is a very profitable enterprise. The price of eggs is steadily advancing. A large amount of eggs and dressed poultry is being imported from Washington and even after the payment of duty a fine profit is made.

Cloverdale is located on two railways, the Great Northern and the British Columbia Electric, which give convenient service for the sale of all produce in the large and growing markets of Vancouver and New Westminster. We have a large number of truck garden, fruit and poultry farms of from one acre up, the prices ranging from $150 per acre as per the following schedules:

Cloverdale Orchard Tracts

Blk. No.	Acres	Price
1	1 0, per acre	$300
1	1 0, per acre	250
1	1.0, each	250
1	1 0, per acre	300
2	6.0, per acre	200
3	6.0, per acre	200
4	6 0, per acre	150
5	6 0 per acre	150
6	6 , per acre	150
7	6 per acre	150
8	7.147, per acre	200
9	7 147, per acre	200
10	6.0, per acre	150
11	6 0, per acre	150
12	6.0, per acre	150
13	6.0, per acre	200
14	6.0, per acre	200
15	6.0, per acre	225
16	1.0, per acre	300
16	1.0, per acre	250
16	1 0, each	250
17	1 0, each	300
17	1 0, per acre	300
18	6 0, per acre	2 5
19	6 per acre	200
20	6 0, per acre	200
21	6 per acre	150
22	6 per acre	150
23	6 0, per acre	150
24	7 147 per acre	200

TERMS

One-fifth cash, balance 6, 12, 18, and 24 months, 7% interest

Cloverdale Poultry and Truck Garden Farms

Blk. No.	Acres	Price
1	3.1, per acre	$400
2	2 94, per acre	400
2	1 05, per acre	350
2	1.05, per acre	300
2	1.05, per acre	300
2	1.05, per acre	250
2	1 05, per acre	250
3	1.05, per acre	350
3	2 10, bldg., both	650
3	1.05, per acre	250
3	1.05, per acre	250
4	5.257, per acre	350
5	5.257, per acre	350
6	5.3, per acre	200
7	5.3, per acre	150
8	5.3, per acre	150
9	5.3, per acre	150
10	5 3, per acre	200
11	6.0, per acre	200
12	6.0, per acre	150
13	6.0, per acre	150
14	6 , per acre	150
15	6 0, per acre	200

TERMS

One-fifth cash, balance 6, 12, 18 and 24 months, 7% interest.

This is splendid opportunity of making yourself independent. The profits are big. Our prices are right. If interested ask for further particulars, views, etc. Now is the time to act. Write today.

NATIONAL FINANCE COMPANY

LIMITED

Subscribed Capital, $1,000,000
Paid-Up Capital . 535,000
Reserve 250,000

Vancouver, British Columbia

Clean Teeth--- White Teeth

Clean, white, sound teeth; each and all of these things depend upon mouth and teeth that are free from germ life and acidity and that are kept pure, sweet and clean. You are assured of these things by the use of

SANITOL
POWDER or PASTE

The whole science of tooth soundness and mouth cleanness and white teeth put into dentifrice form.

Ingredients in these Sanitol Tooth Preparations that produce such white teeth are also what give them the power to overcome acidity in the mouth.

Ingredients that leave such a fresh taste and such *purely* clean teeth are also the ingredients that destroy all germ life in the mouth and so preserve teeth and health.

An Individual Package

of ... of the Sanitol Tooth or Toilet Preparations sent free on receipt ... dealer's name and address and 4c to pay postage and packing

SANITOL CHEMICAL LABORATORY CO. - - - ST. LOUIS, MO.

HARPER'S WEEKLY

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Augu— '1 1911 HARPER & BROTHERS, N. Y. Price 10 Cents

HARPER'S WEEKLY

February, 1911

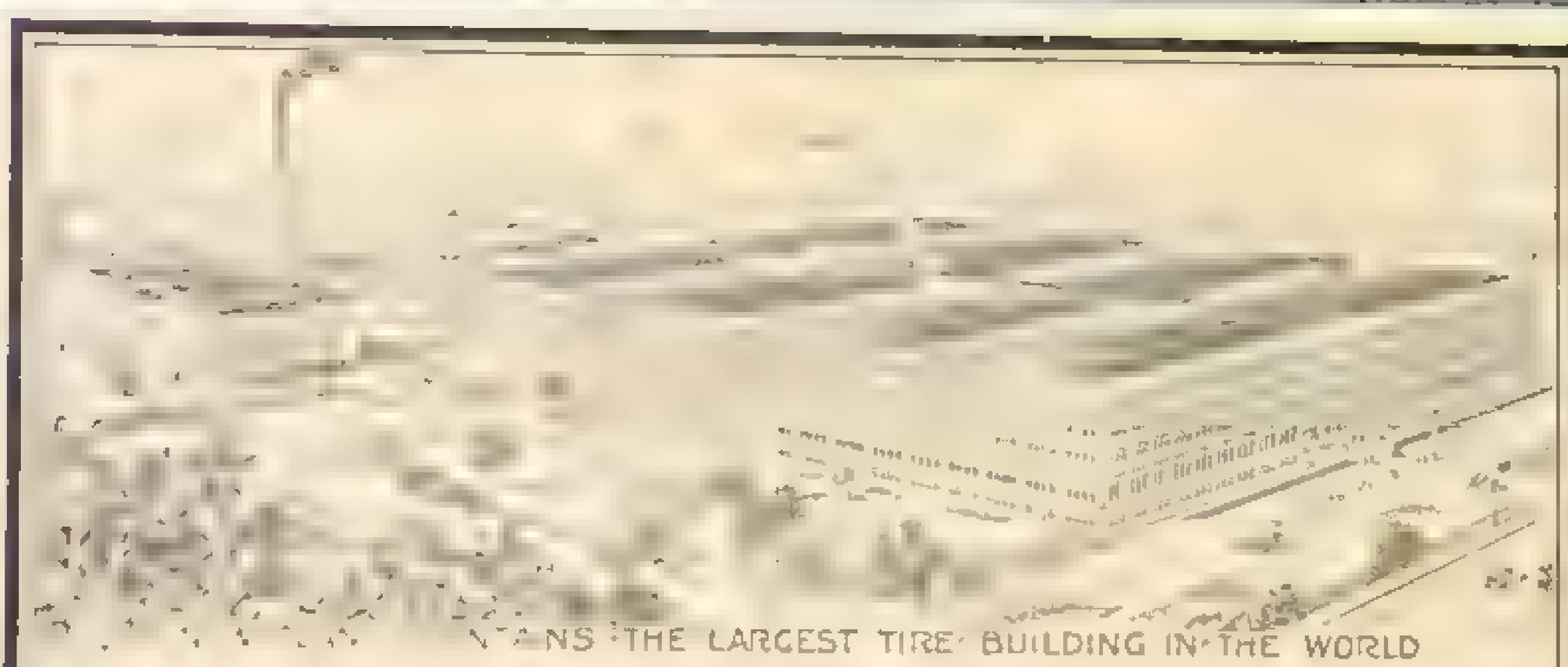
Raising Shetland Ponies
Fancy Show Poultry

West Highland White Terriers
Pekingese Spaniels

20 CENTS
$4.00 a year
Twice a Month

Country Life in America

DOUBLEDAY, PAGE & CO



ONS THE LARGEST TIRE BUILDING IN THE WORLD

For Your New Car, Specify the Tire Equipment Supreme—

"Firestone"

TIRES and DEMOUNTABLE RIMS

IT IS NOT even because Firestone tires hold the world's records for durability and speed, that they are supreme in motordom today. They are not made to win supremacy in motor contests they have won supremacy because of the way they are made

It costs more to make Firestone tires that way. They command a higher price

Yet almost any car maker will let you have Firestone tires on your new car without extra charge, when you *specify them* at the time of purchase.

SAVE YOUR TIRES by specifying Firestone Quick-detachable Demountable Rims to carry your spare tires ... ready to run

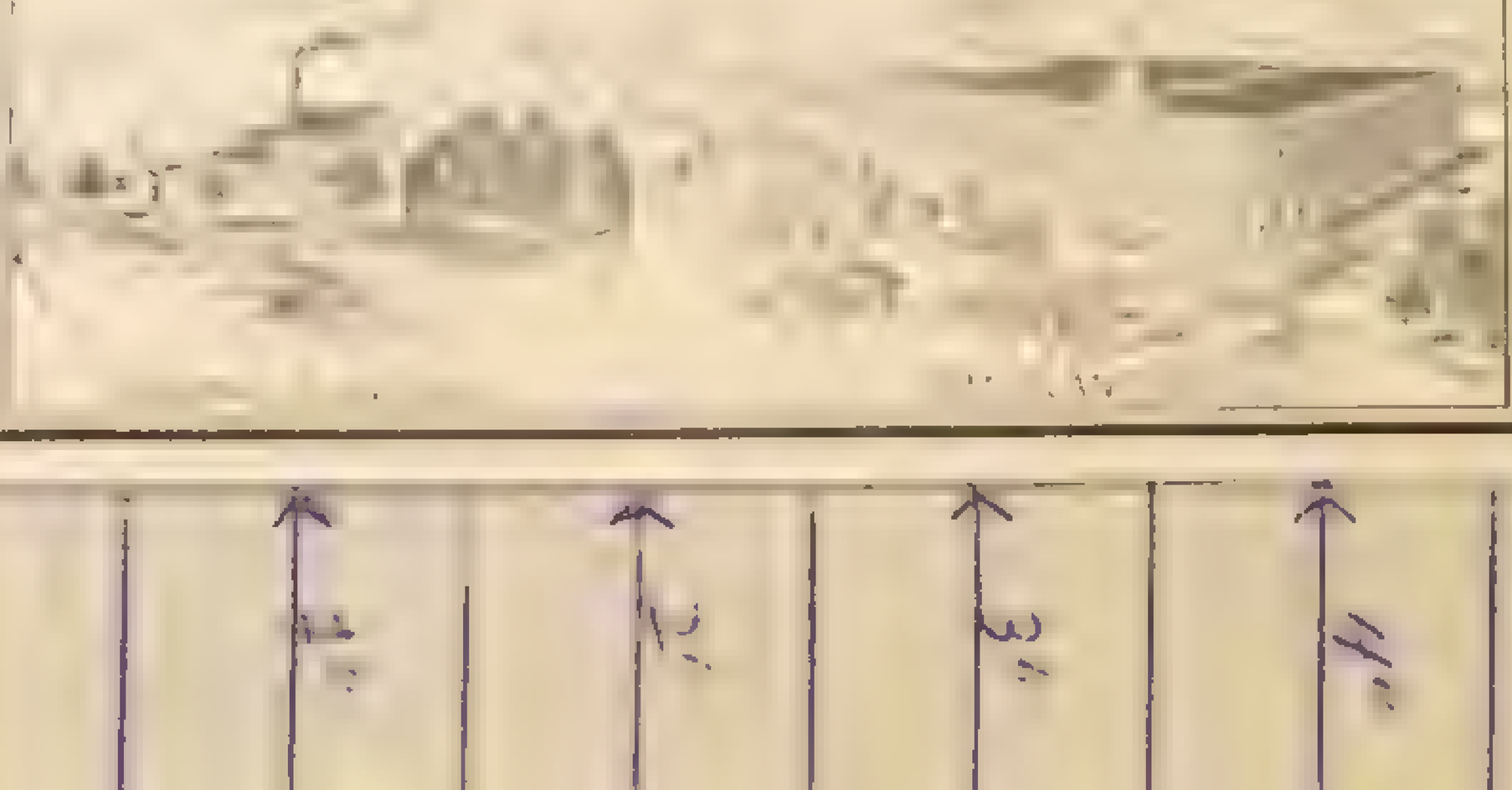
The rims with a "no-split" base that keeps moisture from working through and rotting the case and tube. The rims that allow you to change tires as often as required no matter how many punctures you have per trip

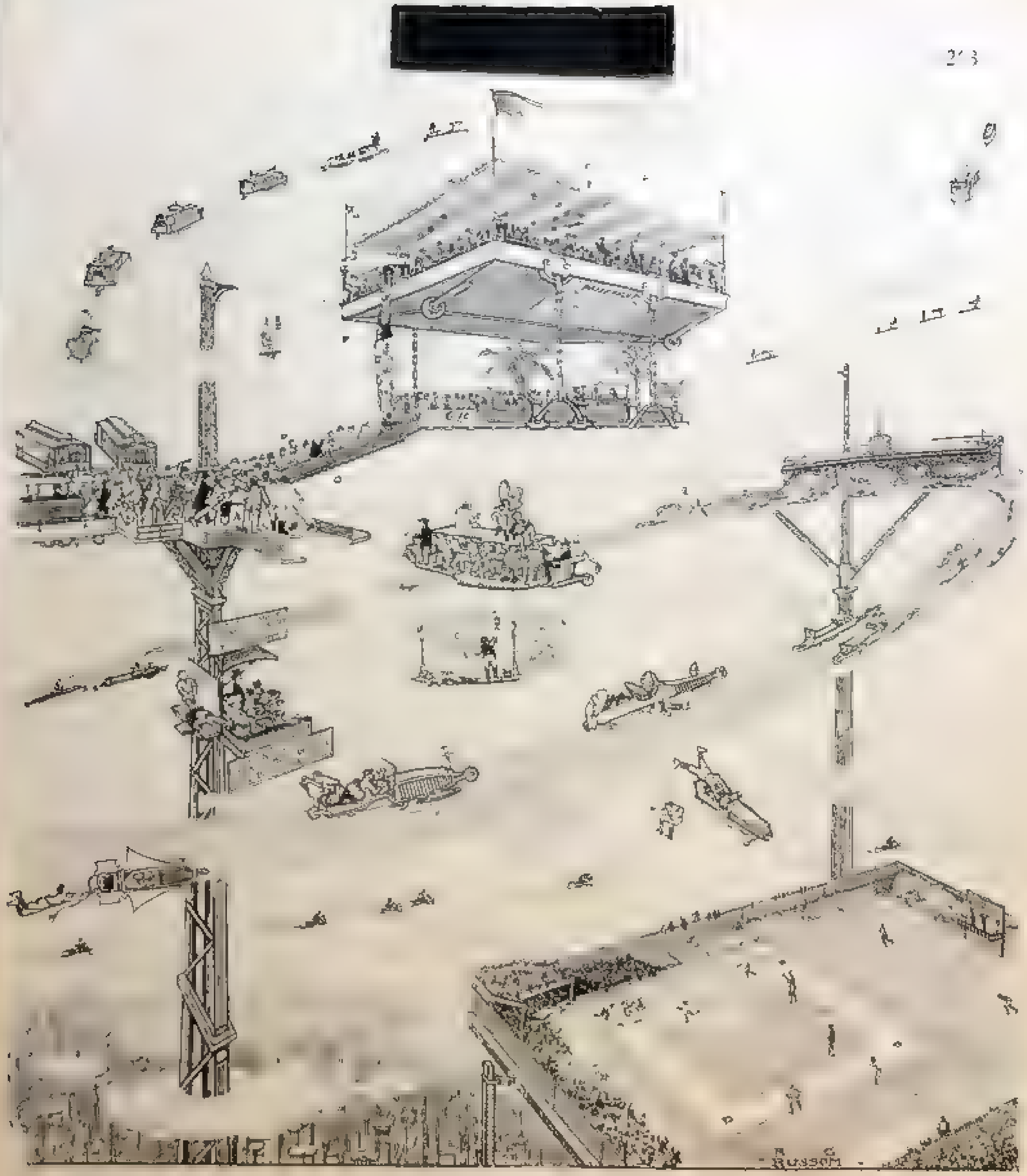
The choice *two to one* in the recent Glidden Tour and used on all three winning Maxwell cars

Specify, firmly insist, and you will get
the best at the price of the ordinary.

The Firestone Tire & Rubber Co.

America's Largest Exclusive Tire and Rim Makers. Akron, Ohio





WIRELESS

Electricity Assisting the Traveller

The many comforts as well as the speed and the safety of travel in 1911 are closely and yet inconspicuously allied with the applications of electricity. In fact, the average traveller is not always aware of the source of the very improvements which his appreciation and support has encouraged

The steady, brilliant illumination which is supplied by current from a small steam turbine located on the locomotive or in the baggage car gives a homelike and cheerful appearance to the travelling cars.

Speed and safety have been increased by electric signals which are operated automatically by infallible indications of the track ahead of the speeding train.

Powerful electric locomotives are now used to haul steam trains through tunnels and up heavy grades, thus avoiding the obnoxious smoke and gases, at the same time increasing the speed and safety of journeys through mountainous country.

Branch lines to rural communities which do not transact enough business to warrant the expense of a steam train, are now operated by the self propelled gas-electric car. This car attracts the distant as well as the local pleasure travel, thus bringing the community into more profitable relations with the larger centres.

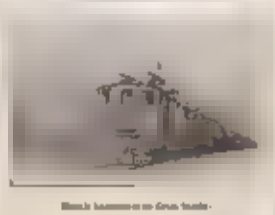
The general application of modern illumination to picturesque falls, caves, municipal buildings, streets and stations along the route has contributed largely to the increasing pleasure in travel. Electrically equipped [illegible] have greatly reduced the [illegible] of the cars and [illegible] the efficiency of the system.

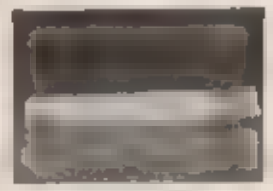
The approach to a terminal city is [illegible] by [illegible] which are made possible by [illegible].

The efficient production of power in large quantities by [illegible] stations the [illegible] water power generation contributes to the extension of electrification of steam lines.

Wherever the appreciation and support of the travelling public warrants further applications of electricity, the engineers and equipment of the largest electrical manufacturer in the world stand ready to assist the railroad.

The apparatus shown on this page constitutes only a small part of the steam railroad equipment which is made by the





General Electric Company

Largest Electrical Manufacturer in the World

Principal Office:
Schenectady, N. Y.

Sales Offices in All Large Cities

LIFE

THE REAL THING

The Question of Strength

MEASUREMENTS show these two men to be of equal muscular development. But a [illegible] test shows the blacksmith to be 20 per cent. the stronger man. The explanation of this difference in strength is that the "professor" of physical culture has by the use of his "system" of gymnastics developed his muscles, while the blacksmith by actual work at his trade has developed not only his muscles but the tendons which attach the muscles to the bones. Ability to do work is the real test of strength.

How is a fire insurance company's strength determined? By a lifting test, similar to that applied to the strength of these two men—the test of actual work done.

The **Hartford Fire Insurance Company** does today the largest fire insurance business in America. In [illegible] it has paid the largest fire loss of any American company and the largest [illegible] conflagration. It has today over twenty-four million dollars [illegible] accumulated for the protection of its policy holders by actual work in the business of fire insurance. The Hartford's strength stands the highest test, so when you want fire insurance

Insist on the HARTFORD

HARPER'S WEEKLY

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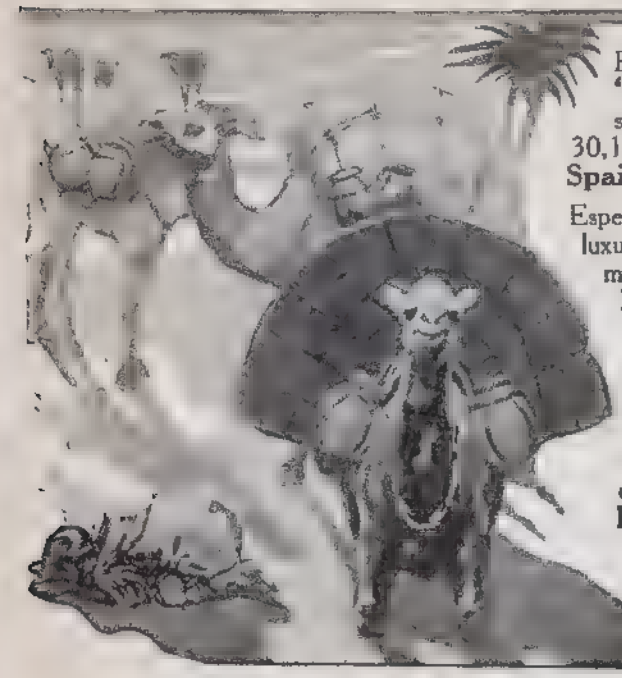
August 26 1911 HARPER & BROTHERS, N. Y. Price 10 Cents

A FRIEND OF THE FAMILY.

LIFE

TO THE ORIENT



By the palatial cruising steamer **"Victoria Luise"** (17,000 tons), sailing from New York, January 30, 1912, on a **78 day** cruise to **Madeira, Spain,** the **Mediterranean** and the **Orient.**

Especially equipped with every comfort and luxury of the best modern hotels, to meet the most exacting demands of pleasure cruising—Frahm Anti-rolling tanks insures comfort at sea. Her spacious promenade deck extending from stem to stern is the largest on any ship.

Itinerary includes **Lisbon, Cadiz, Gibraltar, Algiers, Genoa, Villefranche, Syracuse, Malta, Port Said, Jaffa, Beyrouth, Piraeus, Kalamki, Smyrna, Constantinople, Messina, Palermo and Naples.**

78 days duration of cruise.

Cost including landing and embarking expenses, **$325** and up.

HAMBURG-AMERICAN CRUISES

Around the World

SPECIAL NOTICE—Only a few accommodations left for first cruise leaving New York, Oct. 21, 1911 ranging in price from **$1,000** to **$1,400** including all necessary expenses afloat and ashore. Itinerary includes

Madeira, Spain, Italy, Egypt, India, Ceylon, Straits Settlements, Java, Philippines, China, Japan, Sandwich Islands and Overland American Tour, Inland Excursions and side trips.

Optional tours of 17 days in India, 14 days in Japan.

Two cruises on the Magnificent S.S. Cleveland (17,000 tons), each of 110 days' duration. From New York, Oct. 21, 1911. From San Francisco, Feb. 6, 1912. Now is the time to make your reservations.

The finest, most comprehensive pleasure trip ever offered.

Accommodations on second cruise leaving San Francisco February 6, 1912 from **$650** up.

ANNUAL EVENT "Around the World Cruises" will be repeated in November 1912, and February 1913, by the large Cruising Steamship VICTORIA LUISE.

Send for Illustrated Booklet

HAMBURG AMERICAN LINE

41-45 Broadway **New York**

Philadelphia Pittsburgh Boston Chicago
St. Louis San Francisco

HOT LAKE SANATORIUM

NATURAL HOT MINERAL BATHS

Especially beneficial to those suffering from kidney, stomach and skin diseases. Thorough hospital equipment. Medical staff unexcelled in the Northwest. Rates lower than other sanatoriums. Accomodations unequalled. Directly on main line O.-W. R. & N.

ASK AGENTS FOR SPECIAL ROUND TRIP TICKETS

WRITE FOR ILLUSTRATED BOOKLET **HOT LAKE SANATORIUM** WALTER M. PIERCE, Pres. and Mgr HOT LAKE, OREGON

First National Bank

of Portland, Oregon

CAPITAL, $1,500,000
SURPLUS, 750,000

To protect the depositor is the first duty of a Bank.

Deposit Your Funds

with a Big Substantial Bank

This booklet contains valuable information for you. It tells you how your funds can safely earn 4%

This bank is recognized as one of the most conservative institutions in the United States.

¶ Our Banking-By-Mail Department is modern and complete. No matter where you live you can deposit with us with perfect convenience.

¶ This booklet tells you of our methods and explains the essentials of safely investing your funds. It is sent without expense or obligation.

Write for booklet "A"

Washington Trust and Savings Bank

SEATTLE WASH.

HRISTMAS

A SERIES OF [illegible] PAINTINGS

THE TOY VENDER

THE LADIES' HOME JOURNAL

THE NEW-YEAR NUMBER

10 CENTS

JANUARY 1, 1911

THE CURTIS PUBLISHING COMPANY, PHILADELPHIA

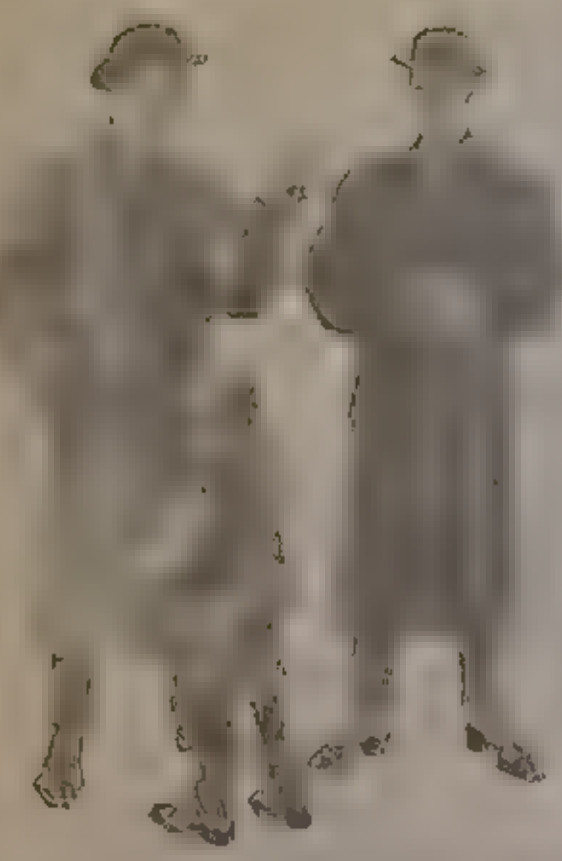
THERE'S genuine worth, refinement, manhood in Kuppenheimer Clothes. They stamp a man for society and business recognition. They're a "letter-of-credit" among strangers.

Look for the Kuppenheimer label and you'll find pure virgin wool fabrics of beauty and permanent worth, crisp style and clean-cut character.

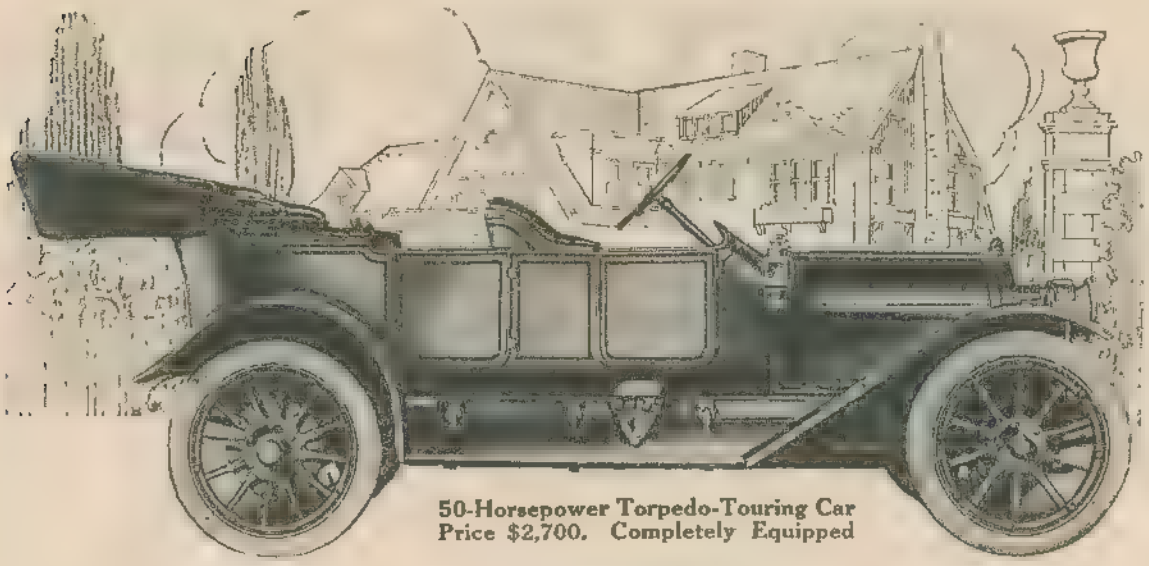
Shown by the better clothiers—worn by the better dressed men. Our book, "Style and Me," mailed on request.

The House of Kuppenheimer

Chicago New York Boston



Copyright 1910 Kuppenheimer



50-Horsepower Torpedo-Touring Car
Price $2,700. Completely Equipped

New Inter-State "50"

Is Outgrowth of "40's" Immense Popularity

The sensational value of our medium-sized "40" produced a nation-wide clamor for this same "Inter-State Quality" in a bigger, more powerful car.

The new **Inter-State** 5 or 7 passenger "50" Torpedo-Touring Car with its new body lines and full equipment is our answer to that insistent demand. The big beauty as well as the true and tried "40" are now ready for more dealers and waiting customers. Four additional acres of factory floor space have made this greater output possible.

Standard for Value

The **Inter-State** "40" has set the standard for motor car value. This trusty car for $1,750 has been universally admired because it compasses the great features of cars costing twice this amount. The price, however, is that which **should** prevail for the very utmost in materials and performance. **Greater motor car value cannot be purchased at any price.**

Both "40" and "50" models are today being manufactured in **our factory** in quantities sufficient to fill the increased demand for the highest motor car quality at fair and reasonable cost.

The Inter-State Policy

In our experience we have pursued a somewhat unique rule. Our idea has been to build a certain number of cars, but to build them so that there could be no reaction—no reproach upon us after the cars have been in service a few years. We have even been behind on our orders. Never has there been any necessity for our creating a greater demand by advertising than we could supply. Our additional four acres of factory floor space now enables us to build more cars—consequently to sell more cars. Our policy of carefully building, slowly and painstakingly testing every **Inter-State** car before it leaves our big factory will continue.

Comprehensive Catalog for You

New catalog tells complete story of the **Inter-State** "40's" and "50's" phenomenal value—the best buy in Motordom today. Use coupon reminder below or mail card to secure valuable catalog. Tear off coupon now—while it's fresh in your memory.

Inter-State Automobile Co.

Muncie, Indiana

Licensed Under Selden Patent

Branch: 310 South 18th Street, Omaha, Nebraska

AGENTS

Morrow, Loomis & Co., 957 S. Olive St., Los Angeles, Cal.
Motor Sales Co. of California, 500 Van Ness Ave., San Francisco, Cal
Colorado Inter-State Motor Car Co., 1240 Broadway, Denver, Colo

162

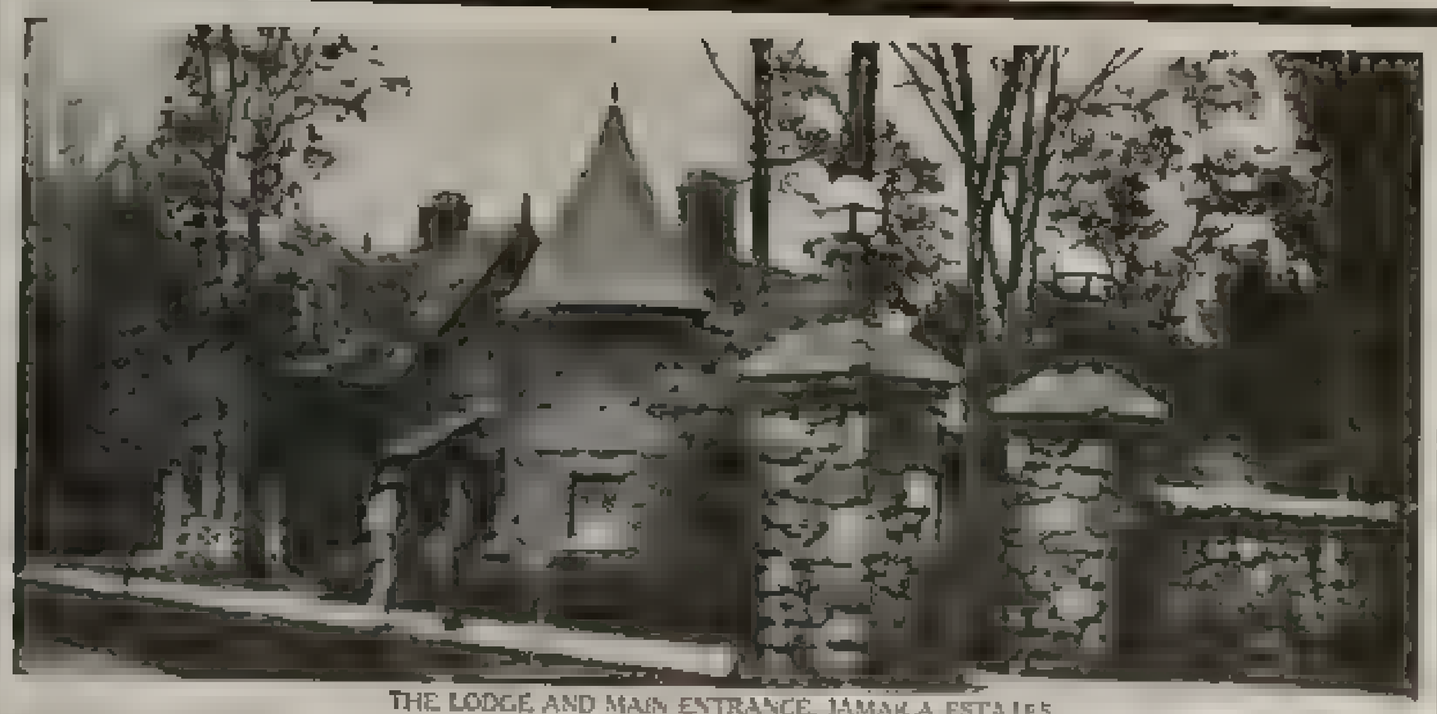
A Reminder

Inter-State Automobile Co.
P. M. 2 Muncie, Indiana

Send me your free catalog.

Name _____

Address _____



THE LODGE AND MAIN ENTRANCE, JAMAICA ESTATES

LETTERS FROM A Contented Country Crank TO HIS FATHER

DEAR DAD Jamaica Estates, L. I., N. Y., June 1, 1911

I have just settled down "for keeps" with woodland, dales and hills all around me I'm not in the Adirondacks nor the Ozarks, but you would almost think so. Remember that foothill region of the Green Mountains where we brought down a buck last fall? This place is identically like it

I am enclosing a few snapshots Would you believe that right here one is no farther from the Waldorf-Astoria than City Hall is from Columbia University? In a little while [illegible] I can take my watch and [illegible] clock at the Metropolitan Building At present it is [illegible] Do you know, looking at this three story dot, one is sure to think of the huge, hustling, noisy city beneath, and it seems like conjuring up a fancy, a dim remembrance of a visit? It strikes me that way, and I commute every day

On another hilltop, you are surprised by the broad expanse of an arm of the blue Atlantic. A wide sweep of country side intervenes, dotted here and there with villages and church steeples

This is certainly the place to live.

It came very near being a public park for the city a few years ago, but luckily for those of us who appreciate "Out On The Land" living, the property was acquired by prominent capitalists

Here and there one sees through the branches wide Colonial verandas, or Gothic gables, or Gambrel roofs where some of the [illegible] of modern architecture in country residences have grown already. But most of the land lies as virgin as it was a century ago. Of course roads and boulevards have been cut through and macadamized. Cement side walks have been laid and [illegible] I [illegible] to find the company had looked after such city conveniences as gas and water mains, permanent sewers, etc. All I had to do was to connect You can readily see what a real advantage this is when one is accustomed to living in the city

It is very easy to get here and to get away. Trains from Brooklyn, Long Island City and Pennsylvania Station all center at [illegible] Jamaica Estates has a station all its own, called Hillside, a short distance from the house

We are actually in Greater New York here, and so we enjoy the privileges of the Metropolitan public schools, police, and fire protection. But the land is taxed only as farm land until building booms

There are over five hundred acres all told

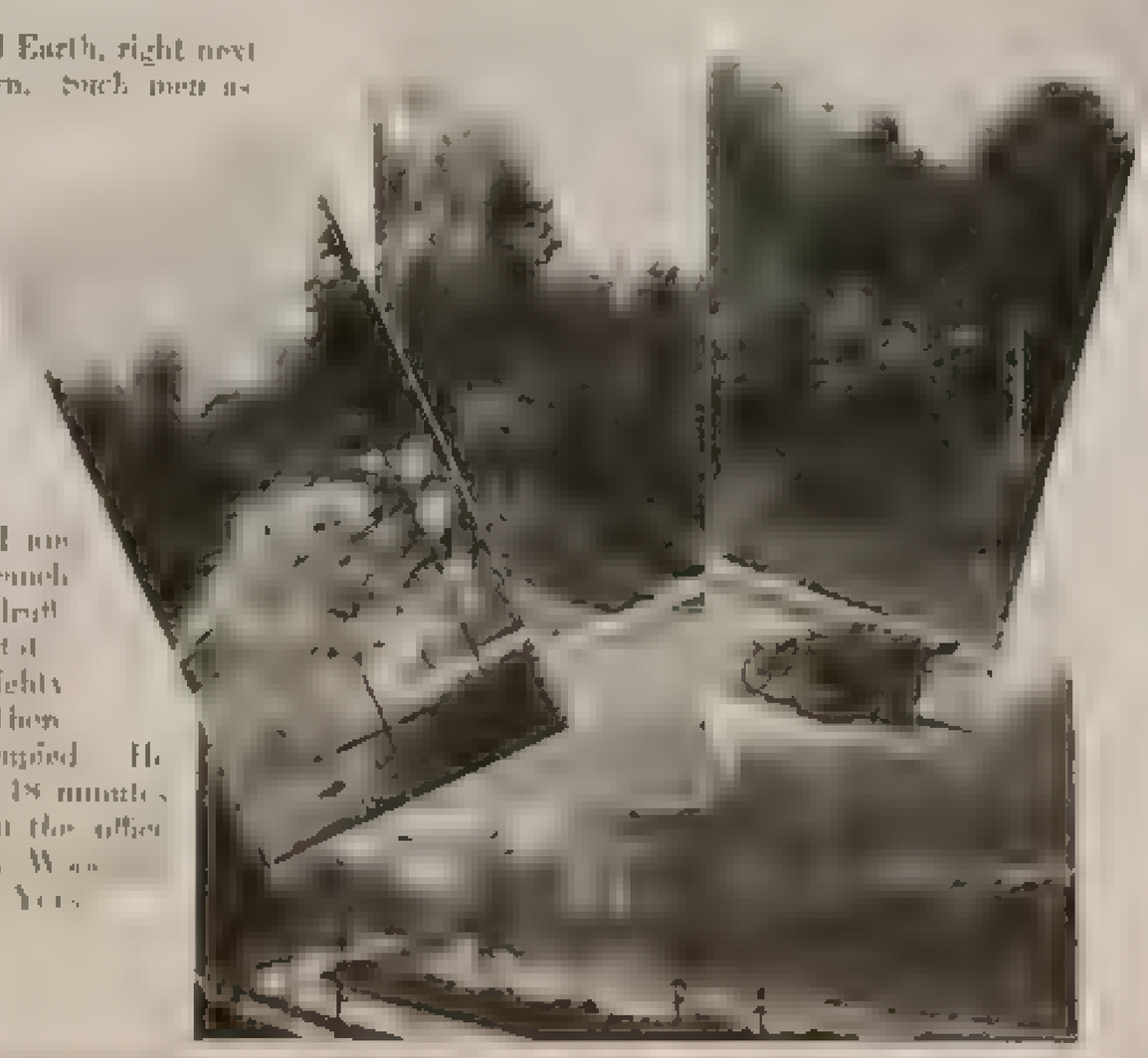
Why don't you negotiate for a slice of Old Earth, right next to mine? You can have a hill all of your own. Such men as Judge Morgan J O'Brien, M J [illegible] Dr J Walter Christian, Dr P F Williams and [illegible] others of eminence have permanent homes here now

If you can't shape things so as to join me and build at once, at least pick out and purchase one of the large wooded plots near mine You'll be saving big money by doing that as property values in this place are going to double within a short time

Come and look it over, anyway. Dad! I am called away for a few weeks on that Mexican ranch matter you know about, but Timothy L. Woodruff whom you know, is the President of Jamaica Estates and will be glad to see that you receive a mighty pretty look with views better than I enclose There are lots of pictures of houses finished and occupied He will arrange also to take you down It is only 18 minutes on the train It needn't take you away from the office more than two hours. Just write to Timothy L. Woodruff, President, Jamaica Estates, 366 Fifth Ave., New York.

Your for "Life in the Open.

Ben



TOASTED
CORN
FLAKES

Five Years to Pay for Your Home

Seems Like a Pretty Good Offer, Doesn't it? Well, That's Just the Opportunity We Are Giving You to Locate on

KENNEWICK HIGHLANDS

¶ Five and ten acre tracts of the richest fruit lands in the Northwest. Watered by the immense and substantial forty mile system of ***cement lined irrigation canals*** of the Northern Pacific Irrigation Company; also supplied with water for domestic use delivered at high pressure. Perpetual water right to an abundant supply is guaranteed. Kennewick Highlands is located from one to three miles from the city of Kennewick on the Columbia River and three railroads.

The Earliest Fruit

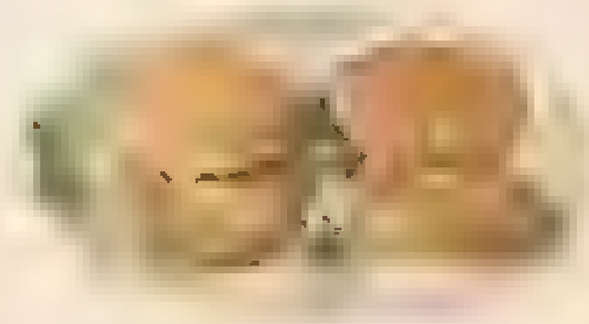
in the Seattle markets comes from Kennewick and being the earliest brings the biggest prices. ¶ You can raise strawberries, watermelons, grapes, peaches, apples, and other crops successfully on these lands ¶ Many experienced fruitgrowers have bought these lands and settled on them. Prices range from $300 to $350 per acre including the water right. Easy terms can be arranged. Further information and booklet will be sent to you if you write your name below.

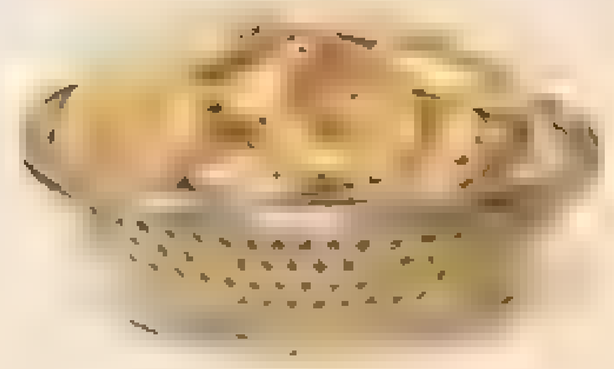
Marsolais & Eastman
INCORPORATED
846 CENTRAL BUILDING
SEATTLE, WASHINGTON

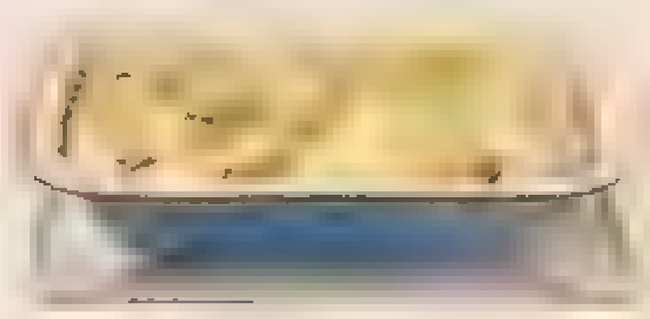
MARSOLAIS & EASTMAN, Inc.
846 Central Building
Seattle, Washington
Send booklet and information about Kennewick to

Name

Address







GROWING CITIES

have made and are making fortunes for thousands of people who are buying real estate in them.

VANCOUVER, British Columbia, is giving the person of limited means more real profit on small real estate investments than any other city in America today.

There is activity on every hand here.

People make real estate values.

VANCOUVER, British Columbia, is increasing in population faster than you can imagine.

We are trained, experienced realty dealers and can give the person with a thousand dollars or more a start toward financial independence.

Communicate with us now.
It will be worth your while.

Reference Northern Crown Bank
R. G. Dun & Co.
Bradstreets

Latimer, Ney & McTavish Ltd
419 Pender St. Vancouver B.C.

Fascinating Moving-Pictures in Your Own Home!

By means of the amazing VICTOR MOTION-PICTURE STEREOTROPE this unparalleled entertainment and education is now within reach of every home.

World-famous photographs, astonishing scenes that you have read about—that you have heard described—now belong to the **humblest** and the **grandest** homes. These famous scenes can now be **reproduced, life-size, in your home!**

Thousands of different series of moving-pictures—for **every** age, for **boys, girls, men, women** and all **school children**—furnish remarkably fascinating entertainment.

We furnish a complete library of **moving** and **stationary** pictures, both of which the **Victor Motion-Picture Stereotrope** reproduces with life-like realism.

In addition to better stereopticon features, it has the additional feature of reproducing pictures in motion—a **combination** obtainable only in this machine.

World descriptions **free** with the pictures—to be read by one of the party while the moving scenes are faithfully reproduced by the machine.

Get This Machine For Free Examination

The Victor Motion-Picture Stereotrope [illegible] free examination. We will [illegible] express prepaid, [illegible] Our Special Introductory Offer

VICTOR Motion-Picture Stereotrope

[illegible] Records [illegible] STEREOTROPE RECORDS [illegible]

Special **STEREOTROPE RECORDS** may be made up from your own negatives, taking groups and scenes, at reasonable cost.

Our great list of motion records already completed now costs **each month—for every generation** of good clean, refined entertainment that interests [illegible] interests, and keeps your mind young and active.

The Victor Motion-Picture Stereotrope is GUARANTEED absolutely **SAFE!** It is the simplest device of its kind in existence. You put the films on an axis and simply turn a [illegible] Nothing to get out of order [illegible] can be used. So simple a child can operate it. Just get it ready for use and **run it.** No trouble whatever to operate.

The Victor has revolutionized moving picture machines! Its amazing superiority, power, brilliancy, ease of handling and perfection in every detail are unparalleled. Simple to operate—**simply turning a crank**—one of the most remarkable inventions of its kind in many years!

—And its astonishingly moderate cost **insignificant!** Every intelligent home should have a Victor. It is a magnificent **entertainer and educator.**

The VICTOR MOTION-PICTURE STEREOTROPE and six [illegible] Records sent on free express approval [illegible] Only [illegible] for money, terms and [illegible]

Extra Records at 25c each

This is the first [illegible] ever made—so in this **only we will make you a trial offer of**

FREE Examination! We'll Ship You a Machine C. O. D.—Express Prepaid

Do please write us at once for catalog of our **motion** and **stereopticon** picture series. Please write **today,** before we have to withdraw this **introductory offer.**

The Victor Animato-Graph Company
10 E. Third Street, Davenport, Iowa

Dealers and Jobbers!

Dealers and Jobbers, write us at once for trade [illegible] New York!

Special Offer Coupon

VICTOR ANIMATO-GRAPH CO
10 E. Third Street, Davenport, Iowa

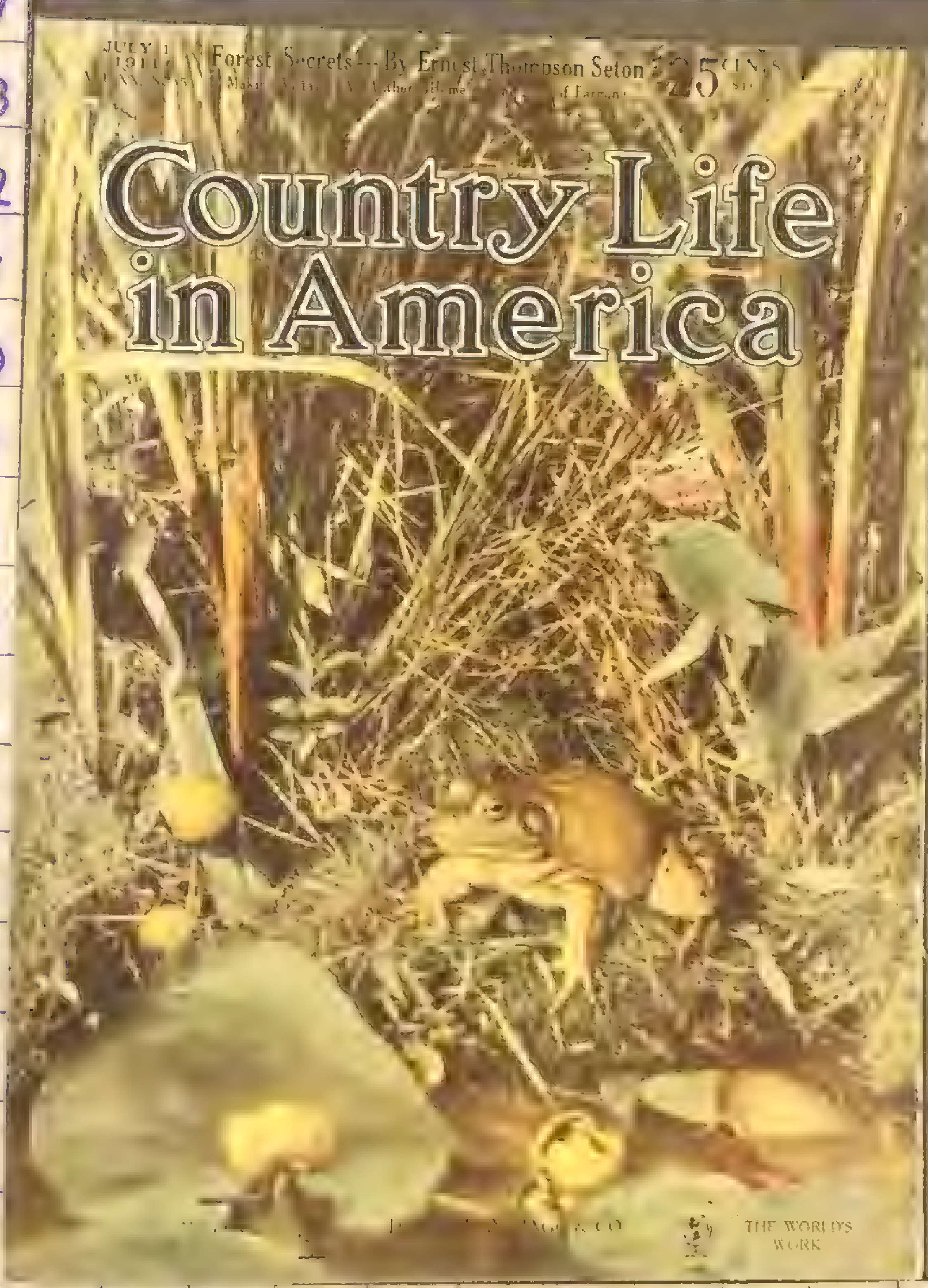
Send me by return mail your **Catalog,** and also full particulars of your **Free Examination Offer.**

Name .....

Address .....

JULY 1911 Forest Secrets — By Ernest Thompson Seton 25 CTS

Country Life in America



THE WORLD'S WORK

Fall Colonist Fares to the Northwest

Daily September 15 to October 15 1911

¶ $25 from St. Paul, Minneapolis, Duluth, Superior, Kansas City, St. Joseph, Omaha. $33 from Chicago. $32 from St. Louis.

¶ Similar reduction in fares for through tickets from all points in the East, Middle West and South to points in Western Montana, Idaho, Washington, Oregon and British Columbia.

¶ One-way, second-class tickets on sale daily September 15 to October 15, 1911, inclusive. Good for stopovers of ten days each at stations en route, at and west of Jamestown, North Dakota.

¶ Honored in electric-lighted, leather-upholstered Tourist Sleeping Cars, running through to the North Pacific Coast daily from Chicago, St. Paul, Minneapolis, St. Louis, Kansas City and St. Joseph. Dining cars, a la carte, for all meals on all Northern Pacific through trains.

¶ Locate this Fall in the Land of Fortune. Make a good living—and a good profit—as thousands are, raising apples and other fruits, vegetables, grains, grasses, alfalfa, cattle, hogs, poultry. Delightful climate, fertile valleys, irrigated and dry-farming lands. Free Government Homestead Land in choice localities open to entry. The growing cities present great opportunities, too. Ask for "Through the Fertile Northwest" and "Colonist" folders. Name state in which interested, if possible.

¶ For free literature and full information ask

L. J. BRICKER, General Immigration Agent, ST. PAUL, MINN.
A. D. CHARLTON, Asst. General Passenger Agent, PORTLAND, ORE.
A. M. CLELAND, General Passenger Agent, ST. PAUL, MINN.

Get a Home in the Land of Fortune

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

In the

Vineyards, Orchards *and* Farms *of the* Northwest

ARE unequalled opportunities to make money in intensive farming, alfalfa, grain and fruit growing, vegetable raising, dairying, poultry, hog and cattle raising. Intensive irrigated farming and fruit growing afford lucrative and healthful employment outdoors in a glorious climate. The fruit lands of the Northwest grow prize-winning fruits and berries. The grain fields of the Northwest yield bountifully of the best grades of product. The Northern Pacific extends into or through Minnesota, Wisconsin, North Dakota, Montana, Idaho, Washington and Oregon. New, rich territory being opened up by recent extensions. The Homeseeker's Chance!

You ought to learn more about the Northwest and its possibilities. You ought to see it. Write today for information. Say what state interests you most

NORTHERN PACIFIC RAILWAY

The Scenic Highway Through the Land of Fortune

A. D. CHARLTON, Assistant General Passenger Agent, Portland, Oregon
A. M. CLELAND, General Passenger Agent, St. Paul, Minn.

THE SAFE LINE

The AUTOMATIC BLOCK SIGNAL

Is the most approved and successful invention known to the science of railroading for protection against accidents. ¶ Out of a total of 17,365 miles of road in the United States so protected, nearly one third is on the great system comprising the Union Pacific, Oregon Short Line, Oregon-Washington Railroad & Navigation Co. and Southern Pacific. ¶ Those companies have spent over *five million dollars* installing this wonderful safety device, and final proof of its unparalled efficiency is the fact that they carried nearly *fifty million passengers* during 1910 without sacrificing one life. ¶ *Oregon-Washington Railroad & Navigation Co.*, Oregon Short Line, Union Pacific and Chicago & Northwestern, forming the direct line between Portland and Chicago with splendidly equipped through daily trains, is perfectly protected the entire distance.

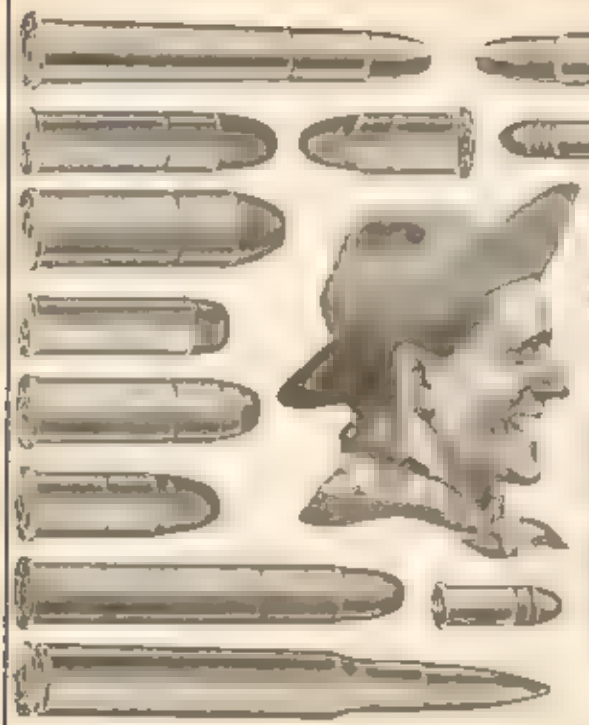
Keep in mind our **EXCURSION FARES EAST**

Over this line during the season of 1911, from all points on the O.-W. R. & N. Co.

To	*Fares*	*To*	*Fares*
Chicago	$72.50	Minneapolis, via Council Bluffs	$63.90
Council Bluffs, Omaha, Kansas City, St. Joseph, St. Paul	60.00	Boston	110.00
		New York	108.50
		St. Louis	70.00
		Washington, D. C.	107.50
St. Paul, via Council Bluffs	63.90	Atlantic City, N. J.	102.40
Minneapolis, direct	60.00	Denver	55.00

SALE DATES—August 15, 16, 17, 21, 22, 23, 28, 29 and 30. September 1, 2, 4, 5, 6 and 7. Stop-overs within limits in either direction. Final return limit October 31st. One way through California $15 00 additional Inquire of any O.-W. R. & N. Agent for more complete information, or

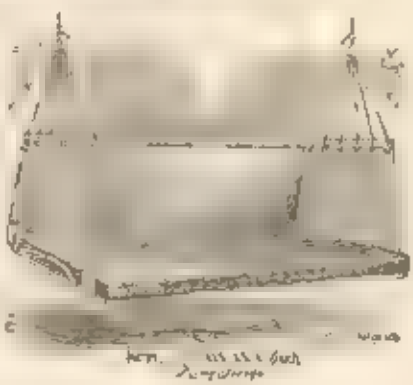
WM. McMURRAY, *General Passenger Agent*
PORTLAND, OREGON



US AMMUNITION

US CARTRIDGE CO.

The Palmer Hammocks and Couch Hammocks



The I. E. PALMER CO.

MIDDLETOWN CONNECTICUT

New York Office, 35 W. 18 S. ...

Crawford.

For 1912

Crawford, Model 72-30 Touring Car, Fully Equipped, $2100

Modern factory equipment is a necessity for turning out the best kind of a car. The Crawford factory is modern from every standpoint. The enormous growth of the business compelled us to double its size.

Our equipment this year, combined with our expert designers and builders, has enabled us to put out the very best car at the lowest price.

Compare the Crawford with any other make. Every part is the best that money and experience can produce. The only thing cheap about it is the price.

SPECIFICATIONS

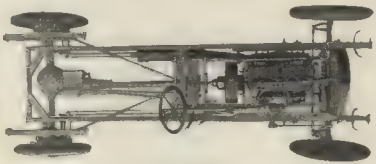
MOTOR Continental Motor; cylinders cast en bloc, valves enclosed; 1912 Stromberg carburetor—hot air attachment

TRANSMISSION Selective type, three speeds forward and reverse; roller bearings throughout

TRANSMISSION CONTROL Automatic interlocking change gears in grease-tight case

FRAME Pressed steel, an improved drop with forged spring, hangers and steel subframe

TIRES Goodrich front, 34" x 3½"; rear, 34" x 4", Q. D



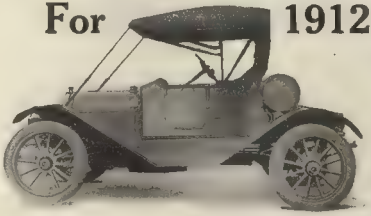
Crawford Chassis

Crawford Automobile Company

Hagerstown, Maryland

Crawford.

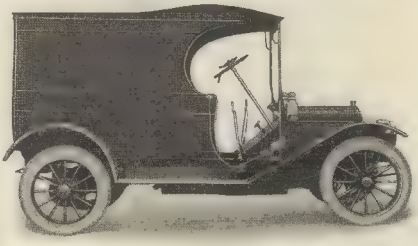
For 1912



An up-to-date roadster for city or country use, which meets that desire for luxurious, de luxe appointments along the broad, smooth boulevards or up the steepest grades, it glides silently along, giving to its occupants that feeling of comfort and security.

Plenty of reserve power to "open up" over that fine bit of country road and an engine that can be throttled down to a walk in the city's congested districts.

Crawford 12-30 Roadster, $1400



Crawford Truck, 30 H. P.

Standard closed body, $1300 **Standard open body, $1250**

This truck has a carrying capacity of 1200 pounds
Built to stand the wear and tear and deliver the goods under any and all conditions.
The closed body is large and roomy, having a length of 58 inches, width, 36 inches and height, 53 inches.
Special bodies of any character can be furnished to order
Sliding gear transmission shaft drive

DEALERS: The Crawford line for 1912 is complete in every detail. We have some good territory open for live dealers. Write or wire for proposition.

Crawford Automobile Company, Hagerstown, Md.

PENNSYLVANIA · TEXAS · CALIFORNIA · ILLINOIS · WASHINGTON

The Only Complete Car

Mr. Dealer:
Don't You Want to make these sales?

Buyers will want the Inter-State—the only complete car ever produced. The car that in itself performs **all the labor of Electric Self-Starting, Electric Lighting and Ignition; Tire Pumping; and the Automatic Regulation of Fuel Consumption.**

The Labor-Saving Self-Controlled

Inter-State

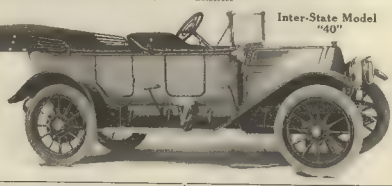
King of all Cars for 1912

Electric Starter Starts the motor without crank-ing, without danger, without touching the clutch pedal without engaging any gears, without releasing a pedal after motor starts. Just push the switch when you are ready to start—nothing more. It's as easy as striking a match.

Electric Lights Consist of two powerful head lamps and a tail lamp. Also the small lamps for illumination of speedometer and clock dials. All or any combination of lights can be turned on by simply turning the switch. Always ready—no tanks or generators to look after and renew.

Automatic Carburetor Entirely regulated from the steering post. A simple movement of the lever by your finger gives all the regulation required for economy of fuel and increased power. Perfect results to novice and expert.

Long Stroke Motor Four cylinder type is a triumph of engine making. Made and tested out entirely in the great Inter-State factory. By using mass construction all back pressure is avoided and the power "hangs on" at low speed. Like an electric motor. Enclosed valves make it almost noiseless.



Inter-State Model "40"

Model 40—5 Passenger, Fore Door Touring Car.
Model 41 4 Passenger Demi Tonneau.
Model 42 Roadster type—all with the splendid new nine motor, 4½" bore, 5½" stroke, developing 5 to 8 H. P. more than rated, 3 speeds forward and one reverse, completely equipped and with all 1912 features here mentioned.

$2400

Model 50—7 Passenger Fore Door Touring Car.
Model 51 4 Passenger Demi Tonneau.
Model 52—Roadster type—all with the new "60" 5-inch bore, 6" stroke motor, developing 8 to 11 H. P. more than rated by actual test. 4 speeds forward and one reverse completely equipped and with all 1912 features here mentioned.

$3400

The Inter-State "40" and "50" Equipment is *Complete*

Rigid guide type self-cleaning automatic windshield with patented ventilating attachment, a wonderful pair of search headlights, electric side lights, combination tail light, heavy nickel and enamel finish throughout, dimming device on headlights for use on city streets, right speedometer, clock and electric light controlled signal horn, right adjustment of fine, mirror steering column, demountable quick top pockets on inside of doors, extra demountable rim, gasoline gauge on dash, power tire pump and complete tool outfit.

Write, wire or phone (our expense) for agency

Inter-State Automobile Company

See the INTER-STATE Line January 6-13, 1912, at Madison Square Garden Show—Space 50, Exhibition Hall

MONTANA · GEORGIA · MISSISSIPPI · ARKANSAS · DELAWARE · N. HAMPSHIRE

NEW YORK · MARYLAND · OHIO · MICHIGAN · FLORIDA · MAINE

The Awakening of the Motoring Public

requires the Dealer to carry up-to-date accessories.
The Garage, and the Car Owner now demand the best.

THE AUTO CLÉ WRENCH

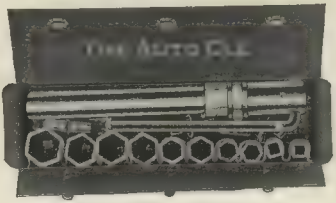
is now considered the best Socket Wrench on the market. Sockets are of pressed steel, cold drawn, and case hardened. Will stand much rough usage.

LARGE SET

Trade Mark Registered U. S. Patent Office

LARGE SET, in Wooden Box, with 30 Sockets . . $10.00
SMALL SET, in Leather Case, with 10 Sockets . . 7.59

SMALL SET



Trade Mark Registered U. S. Patent Office

OH, YOU DEALER—

Write today for our selling proposition. Cuts for catalog on request.

Stop at our Madison Square Exhibit, Space No. 581

MOTOR PARTS CO. - Plainfield, N. J.

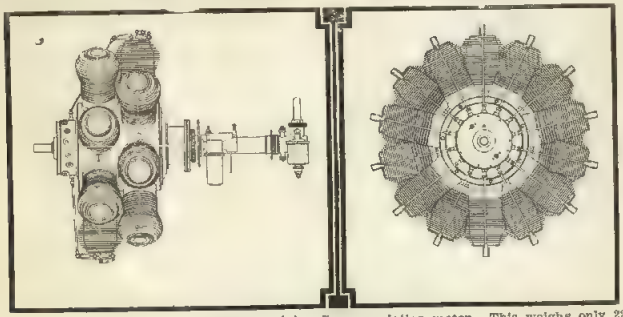
altitudes of from 7000 feet upward the cold is extreme, and if higher altitudes are to be reached such devices will be absolutely necessary. At any rate few aviators care to plane down from such a height without the assistance of the motor, and it will be on the side of safety to provide against the stopping of the motor.

THE GNOME AVIATION MOTOR

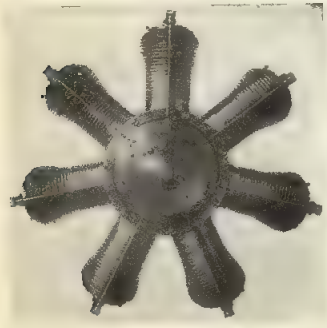
It is evident that the revolving engine is destined to be quite popular for aviation use. This radial cylinder construction obtains an extremely light motor in proportion to the power. For instance, if we consider the weight of the seven cylinder, 50 h. p. Gnome at 165 pounds, this can be divided into eight parts, seven of which will be equal, and can be considered as representing the seven cylinder groups of cylinders, pistons, connecting rods, valves, etc., one set weighing 18 pounds. The eighth part is, of course, the crank case, including crankshaft bearings, cams, gear, etc., and this division of weight gives it 39 pounds. Now a single cylinder engine made up of one of these cylinders and the crank case would weigh about 50 pounds, and an engine of the seven cylinder vertical type about 300 pounds. This difference in weight is of considerable import to an aviator. An additional saving in weight is effected through the engine being air cooled, doing away with water jackets and connections. Cooling is, as may be imagined, extremely effective, as the engine revolves in the air at great speed. This very revolution, however, against the resistance of the air, takes power, it being estimated that the seven-cylinder Gnome expends 7 h. p. in overcoming the air resistance to its revolution.

The revolving mass has a flywheel effect that is very valuable in giving uniformity of explosion spacing and consequent steadiness of power application, and as the charge is conducted through the hollow crankshaft and enters the cylinders through automatic valves in the piston heads, while the exhaust valves are in the cylinder heads, centrifugal force aids charging and expulsion of the burnt gases in an appreciable degree. Full advantage cannot be taken of this in speeding up the motor, however, for the centrifugal force at speeds greater than about 1300 revolutions per minute would be so great as to tear the engine apart. Two types of the Gnome engine are being put on the market by the Aeromotion Co. of America, of St. Louis, Mo., a seven-cylinder and a 14 cylinder. The 14 cylinder motor is in effect two of the seven-cylinder motors placed side by side, the general features being the same, the crankshaft having two throws, one for each set of seven cylinders. A separate magneto and oil pump are provided for each set. The bore is about 4.4 inches, the stroke 4.8.

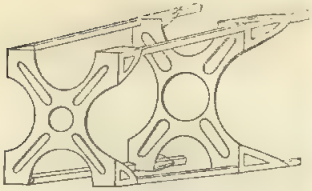
The weight is 220 pounds, and when it is considered that there are seven explosions per revolution, the power which this motor



Two views of the 100 h. p. 14 cylinder revolving Gnome aviation motor. This weighs only 220 pounds. Bore 4.4, stroke 4.8.



The Gnome seven cylinder 50 h. p. revolving motor. Bore 4.4, stroke 4.8. Weight 167 lbs.

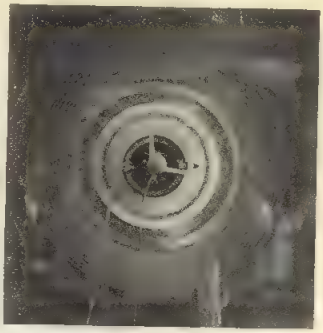


A mounting for the forward part of the fuselage for the Gnome

develops and its steadiness of application due to the 220 pounds of flywheel, may be appreciated.

The cylinders with their flanges are in one piece, of forged nickel steel, with the spark plugs, of a special type, which is unaffected by oil which may pass between the cylinders and pistons by centrifugal force, are in the heads, beside the exhaust valves.

The inlet valves are automatic and are supplied with weighted levers which counteract the effect of centrifugal force. They are easily accessible through the top of the cylinder. The exhaust valves are likewise provided with weights to neutralize the effect of centrifugal force.



End view of the Gnome revolving aviation motor in action.

The magneto is gear-driven, as is the oil pump. The carburetor, which has an automatic air valve, is placed at the end of the hollow crank shaft. The motor is mounted on the forward part of the fuselage, the crankshaft acting as an axle upon which it revolves.

The Call Aviation Engine

The Aerial Navigation Co. of America, of Gerard, Kansas, has brought out the "Call" Aviation Engine, as a result of much experiment, not only in perfecting it, but in using other aeronautical engines. The result is a motor of the regular opposed cylinder type, the same type as the famous Darracq, with which Santos Dumont's machines are equipped. It is made in two models—2-cylinder 45 h. p. weight 135 pounds, for $700, and 4-cylinder, 90 h. p. weight 225 pounds, for $1,200. Bosch Magneto ignition is $50 and $100 extra.

The company makes the mixtures for their castings, and the castings themselves. The company states that before deciding to put in their own foundry they corresponded with some thirty manufacturers of gray iron castings without finding one to furnish the desired grade.

The Cylinders.

The cylinders have a bore of 6 inches and a stroke of 5¼, with mechanically operated inlet and exhaust valves. The special vanadium alloy grey iron cylinders are machined to a perfect fit, both inside and out, and are pressed into a water jacket of a specially strong grade of Magnalium, the lightest and strongest alloy of aluminum.

As shown by the illustration, the cylinders are pressed in from the top. For about one half the way down they are of ample thickness proportional to the size of the cylinder, while beyond, where there is no explosive stress, they are about one half that thickness. At the top of the cylinder is an additional shoulder machined to fit with a water-tight connection into the magnalium water jackets.

This construction is very much stronger than other light weight designs, giving a cylinder of about one half the weight per horsepower of any other type, it is claimed. It also avoids the danger of leakage, and constant giving away at the joints encountered in the usual copper or other sheet metal water jackets. As will be observed, the iron cylinder is supported along its length by ribs or flanges extending inwardly from the magnalium water jacket and fitting tightly against the machined outer surface of the iron cylinder, thus strengthening the explosion chamber.

The cylinder heads are of the same construction as the cylinders, the main part being of magnalium, thoroughly water-cooled and, where adjacent to the explosion chamber, lined with a circular plate of vanadium grey iron. Both valves are in the head, and are mechanically operated. They have a diameter of 2 inches, and lift ⅝ inch. The valve seats are water cooled, while the valve cages are air cooled, to secure lightness. These cages are cast in one piece, of vanadium grey iron, and are very thin, with cooling flanges to protect

Bosch Equipped Cars Supreme During 1910

Among other 1910 Victories of Cars Equipped with Bosch Magnetos, are the following:—

Events and Trophies	Bosch Equipped Winners
The Glidden Tour	Chalmers
"Prince Henry" Tour (Germany)	Austrian Daimler
Kaiser-Nicholas Tour (Russia)	Mercedes
Harrisburg Reliability Run	Pullman
Coupe des Voiturettes	Zuccarelli
24-Hour Brighton Beach Race (May)	Simplex
Prest-O-Lite Trophy	National
Wheeler & Schebler Trophy	Marmon
Remy Brassard & Trophy	Marmon
24-Hour Brighton Race	Stearns
Elgin Trophy	*Lozier*
Illinois Trophy	National
Kane County Trophy	Marmon
Fox River Trophy	Benz
Cobe Trophy Race	Marmon
G. & J. Trophy	Falcar
Remy Trophy	Marmon
Indianapolis Speedway Helmet	Benz

Events and Trophies	Bosch Equipped Winners
Remy Brassard and Trophy	National
100-Mile Free-for-All	Benz
50-Mile Free-for-All	Benz
200-Mile Free-for-All	National
Algonquin Hill Climb	National
Vanderbilt Cup Race	*Alco*
Wheatley Hill Trophy	Falcar
Fairmount Park Trophy	Chadwick
Fairmount Class 5	Lozier
Fairmount Class 4	National
Fairmount Class 3	Pullman
Fairmount Class 2	Abbott-Detroit
City of Atlanta Trophy	Marmon
Coca Cola Trophy	Falcar
Atlanta Speedway Grand Prize	Lozier
Grand Prize Race	*Benz*
Savannah Challenge Trophy	Marmon
Tiedeman Trophy	Lancia
Ferris Cup (Santa Monica)	Lozier
Free-for-All	Lozier
Light Car I	Durocar
Light Car II	Maxwell

Other Speedway Triumphs

22 of the 23 total Long-Distance Races on the Indianapolis, Atlanta and Los Angeles Speedways, during 1910, were won by cars using Bosch Magnetos.

46 of the 58 Official Speedway Records made on the same Speedways (regardless of class), from 1 kilometer to 250 miles, were made by cars using Bosch Magnetos.

Bosch Magneto Company

223-225 West 46th Street, New York

Chicago Branch: 119-121 E. 24th St. San Francisco Branch: 357 Van Ness Ave.
Detroit Branch: 878 Woodward Avenue

The Victors Used

Bosch Plugs

One of the remarkable incidents of the year was the practically instant success achieved by the new

BOSCH PLUG

Introduced to manufacturers and racing drivers in midsummer the Plugs soon became the standard equipment of the high-grade stock and special cars entered in the more important tours, road and speedway races and contests.

These Trophies and Races were won by cars using Bosch Plugs:—

The Speedway Helmet
Remy Grand Brassard & Trophy
100-Mile Free-for-All
50-Mile Free-for-All
The Rich 200-Mile Free-for-All
G. & J. Trophy
Wheeler & Schebler Trophy
Cobe Trophy
Illinois Trophy
Algonquin Hill Climb
Fairmount Park Race (Three Classes)
Coca Cola Trophy
Atlanta City Trophy
Tiedeman Trophy
Savannah Trophy

THE GRAND PRIZE

Successful and victorious drivers do not use a Plug in an important Race unless they are sure of its dependability and quality.

When a constantly increasing number of victorious cars equip with any plug, you can be sure that there is quality and ignition efficiency in that Plug.

Dealers' orders prove to us how fast the demand for these Plugs is increasing

"SPECIFY BOSCH PLUGS"

BOSCH PLUGS **$1.00 each** **$10.80 The Dozen**

Ask for our Plug Literature

BOSCH MAGNETO COMPANY

223-225 West 46th Street, New York

CHICAGO BRANCH: 119-121 East 24th Street
SAN FRANCISCO BRANCH: 357 Van Ness Avenue
DETROIT BRANCH: 878 Woodward Avenue

The Model "E"
Now Ready

Everyman's Car

$485.00

Rumble Seat and Tool Box $20.00 Extra.

F. O. B. Factory

The Same Price—

THIS new Brush model is built on the same fundamental principles as former Brush cars—on the same fundamental principles that will underlie all future Brush cars—on the same fundamental principles that have made it EVERYMAN'S CAR.

There are refinements and improvements in the Model E which will increase the efficiency of the car and make it more than ever deserving of the great reputation the Brush enjoys among 10,000 owners all over the world.

These improvements are few and not one of them is radical in any way. They are simply the result of a careful study of the car and of the user's requirements.

When we designed and built the first Brush, we were not aiming to make a car that would sell because it was different and low in price. We foresaw the demand for a small, dependable automobile that would provide a quicker, easier and cheaper means of transportation for the thousands who were using horse-drawn vehicles and the street cars in the performance of their duties.

True, the initial cost of the Brush is low. Please do not judge the car by its price, but rather by what it is doing every day for 10,000 users; judge it by the practical sensible features of its construction; judge it by its looks; judge it by the wonderful showing it has made in economy, hill-climbing and endurance contests.

The Brush has always shown well in trials where simplicity, economy and dependability counted, but during the past year some of its performances have been truly wonderful.

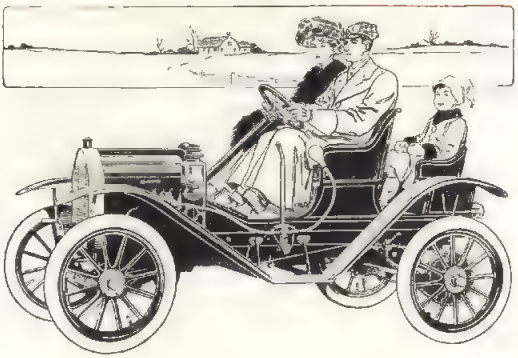
For example, we cite the trip of the

"Abernathy Kids"

You remember the boys who rode broncbos from their father's ranch in Oklahoma to New York to meet Colonel Roosevelt and take part in the now famous Roosevelt parade. These same boys, Louie and Temple, 9 and 6 years old respectively, drove a Brush runabout back to Oklahoma after only three lessons. Louie drove most of the journey, as Temple was not tall enough to reach the control pedal.

Brush Runabout

For Delivery



—a Better Car

The father of the boys chose a Brush for them, because he found after a careful investigation that the Brush was the only car they could start and handle without help, and because it was so simple mechanically they could understand everything about it. Thousands realize this since reading about the trip and seeing this 9-year-old boy driving.

In the Munsey Historic Tour, the principal endurance contest of the East in 1910, the Brush finished with a perfect score and won the trophy in its class. The route covered 1550 miles over all kinds of roads from the boulevards of New Jersey to the rough mountain roads of Pennsylvania.

Thousands of experienced motorists watched the Brush travel on even terms with the big cars on a schedule designed for big car power and big car stability. They saw it come through with a perfect score under conditions that put several big cars out of the running. They saw it prove its dependability in a way no one could doubt.

These two achievements of the Brush are of vital importance to the prospective motor car buyer. The former shows superlative simplicity, each shows dependability

If you use any mode of transportation you will be doing yourself an injustice if you do not investigate the Brush. Let us tell you what it is doing for merchants, physicians, salesmen, collectors, architects, contractors, farmers, R. F. D. Carriers, artisans—in fact, for people in all walks of life—people whose annual income varies from $1000 to $25,000. Let us show you what the Brush will do for you.

If there is no Brush Dealer in your locality let us show you how you can make money selling EVERYMAN'S CAR.

Brush Runabout Co., 1212 Rhode Island Ave. DETROIT, MICH.

Licensed under Selden Patent

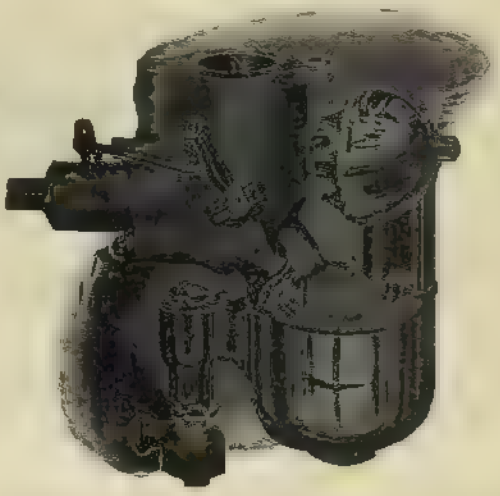
MARVEL CARBURETER
THE NAME DEFINES IT

Spring is Coming and It Will Bring More Trouble to You

The **one** car trouble that grows worse is **carbureter.** You buy more **kerosene** every day now that is labeled "**gasoline.**" It can't be helped, for the refineries cannot supply the demand.

Kerosene used in a Carbureter that was made for Gasoline

1. Will use more fuel,—**extravagant and harmful.**
2. Will miss firing on cold days,—**annoying and dangerous.**
3. Will condense on low throttle,—**kills flexibility.**
4. Will require an over-rich mixture on low,—**kills power when demanded.**



The **Marvel** Model H. was designed after long experiments to cure these faults,—*and does.*

Lots of heat on low throttle prevents the faults in paragraphs 2, 3 and 4.

Moderate heat on open throttle cures the faults of paragraph 1.

It's been proved on hundreds of cars,—let's prove it on *yours,* **the risk is all ours.**

We have a special form to go on Fords, Buicks, Hups and Overland. All ready to go on,—and they stick, too.

Marvel Carbureter Co.,

2224 N. Alvord Street
Indianapolis, Ind.

MARVEL CARBURETER
THE NAME DEFINES IT

WANTED

A LIVE MAN

Age or complexion not a requisite,—just so he is **ALIVE.**

With the prospects for a banner year in the automobile trade,—with fuel growing worse and the name of the **MARVEL GROWING BETTER,**—

Now is the Time to Get Busy

We want said live man in every city or town to show a MARVEL to some fellow who is having CARBURETER TROUBLE,—NOT ONLY SHOW IT, BUT PUT IT ON HIS CAR. It's sold right then,—and that man becomes a booster. He helps your game.

JUST START,—and after that it's easy,—BUT START!

Wire or write us about the whole proposition, for we want to get started **NOW!**

Marvel Carbureter Co.

2224 N. Alvord Street
Indianapolis, Ind.

A Live Dealer *Should Have* A Live Car

THE PENN "THIRTY"

is a live one. A glance at the specifications will show this, and a look at the Car will *prove* it.

The **Penn "Thirty"** was the sensation at the Palace Show, New York. Only one criticism—the **price**. How can we do it? **We know how.**

The **Penn "Thirty"** is more than a vehicle to carry you from place to place. It is

THE CAR DURABLE
THE CAR ECONOMICAL
THE CAR OF HANDSOME DESIGN

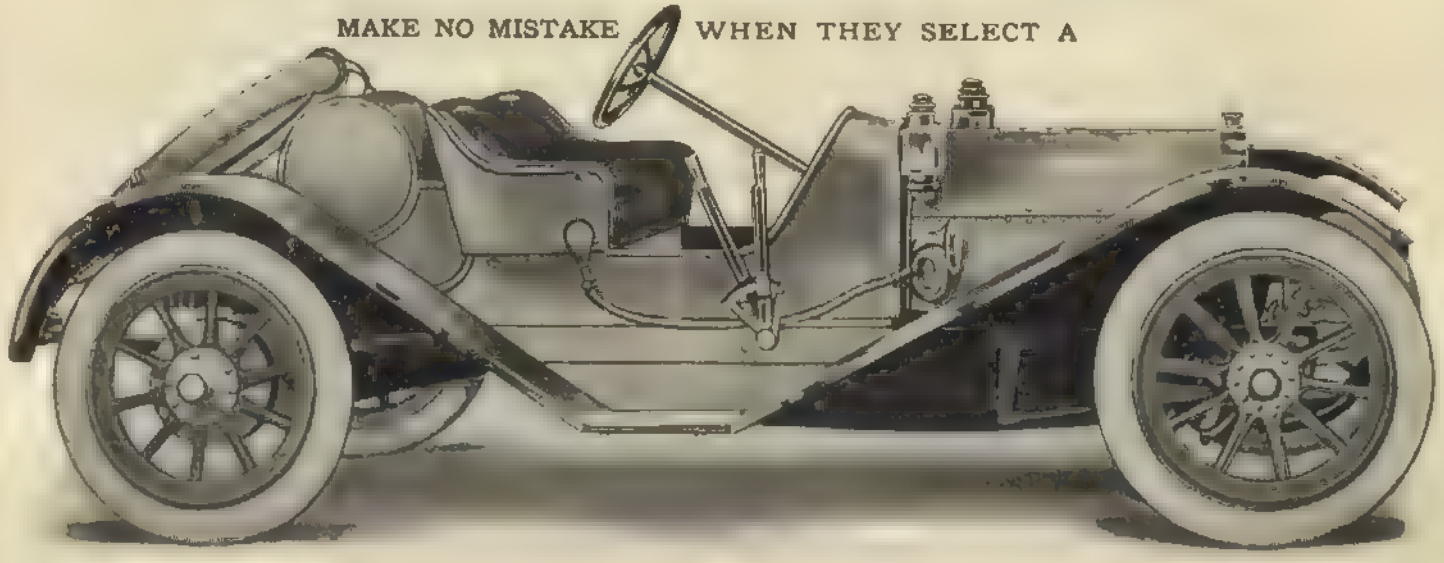
It will carry you through fair weather and foul; will stand the hard knocks and abuse and "get there" ahead of time. It is the car for the dealer because it **sells**; the car for the user because it **goes.**

SPEED, POWER, SAFETY, COMFORT AND REFINEMENT

Are Embodied in Its Makeup

DEALERS *and* DRIVERS

MAKE NO MISTAKE WHEN THEY SELECT A



PENN "THIRTY"

Cylinders cast "en bloc", 30 H. P., 105-inch wheel base, cone clutch, 4-inch frame, ¾ elliptic springs, 3 speeds forward, 2 sets of brakes, 32-inch wheels, dual ignition system. Magneto guaranteed for life of car. **Some good territory open for live dealers.**

Roadster, **$975** Four-Passenger Touring, **$1075**

PENN MOTOR CAR COMPANY, 7510 Thomas Boulevard, Pittsburg, Pa.

THE GREAT WHITE LIGHT

SEARCHLIGHT

BETTER LIGHT
MORE FOR THE MONEY

OUR GUARANTEE

SEARCHLIGHT CYLINDERS, containing SEARCHLIGHT SOLVENT, charged under the SEARCHLIGHT SYSTEM, deliver MORE LIGHTING HOURS than any other system of lighting.

Also, that SEARCHLIGHT CYLINDERS contain MORE GAS than any other cylinders of the same standard size, whether measured by lighting hours, by volume, or by weight (not merely by gauge-pressure), MORE gas and BETTER gas. For full particulars see next page.

SEARCHLIGHT GAS CO.

GEN'L OFFICE 325 MICHIGAN AVE CHICAGO

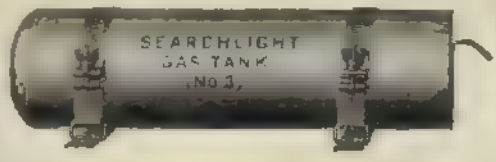
"SEARCHLIGHT"

THE NEW AND BETTER SYSTEM

The SEARCHLIGHT SYSTEM is a wholly new and decidedly better system of acetylene lighting for automobiles, motor boats and other moving vehicles. It is covered by broad patents in the U. S. and foreign countries.

It is so simple, so sound, so certain, that ample capital was instantly available, and in less than a year we have built up an organization double that of any rival system.

For instance, we have already in operation large central factories at Warren, Ohio, and Chicago; branch factories at Camden, N. J., Buffalo, Pittsburg, Detroit, Kansas City, Dallas, Los Angeles and San Francisco, refilling stations at twenty important points, and before the frost is out of the ground we will have a chain of stations from Coast to Coast, far surpassing the "Service" feature of any competing system.



Already a number of leading car builders have contracted for "SEARCHLIGHTS" on all their new 1911 cars and every one of their agents and dealers becomes automatically an agency for the exchange of full tanks for empty ones.

By the time the roads open thousands of owners will have secured similar agencies. So the owner's interests are amply cared for.

Not an Experiment

The SEARCHLIGHT SYSTEM has been tested for two years under every available condition of climate, car and roadbed.

It is not an imitation of any other system, nor a mere improvement; but is a SYSTEM IN ITSELF NEW and BETTER—the

"Great White Light"

It can be quickly connected up to any light-line on any car.

It costs less per lighting hour and gives a whiter, stronger, cleaner light.

It is ABSOLUTELY SAFE, owing to our scientific method of charging a neutral solvent with the acetylene gas and carrying the impregnated solvent in an improved porous packing.

Another feature is our patented recessed tank, whose projecting flange protects the valves and connections from damage in shipment, or on the car—avoiding leakage and loss thereby.

We Guarantee

1. More light hours to the cylinder
2. Greater safety under all conditions
3. Better safeguards against leakage loss

We secure these advantages through—
Our New and Patented Solvent.
Our New and Patented Porous Packing, and
Our New Safety Recess Gas Tank

Service

The large number of our plants and branch houses, at all of which stocks of filled SEARCHLIGHT tanks are carried, make it an easy matter for dealers to secure them. Any dealer everywhere can easily be carrying SEARCHLIGHT tanks, as it is only a question of time until the SEARCHLIGHT will supersede all other portable acetylene lighting systems.

SEARCHLIGHT GAS CO.
325 Michigan Ave. Chicago.
Please send full particulars about your Searchlight system. Note items I picked!
1. Am a car owner and want to know who is the nearest dealer handling your system.
2. Am a dealer and want discounts, etc.

Name

Town State

Cycle & Automobile Trade Journal, March, 1911

SEARCHLIGHT GAS COMPANY

325 Michigan Avenue, Chicago

"THE KING CO

The Maker's Best Effort
The Buyer's Best Judgment

THESE two lines state the simple truth and explain the **"COES"** success. Our best efforts extending over a period of seventy years have produced the present-day **"COES"** QUALITY, which will appeal to your good judgment.

COES WRENCH CO.,

AGENTS: J. C. McCarty & Co., 21 Murray Street, New York City

OF THEM ALL"

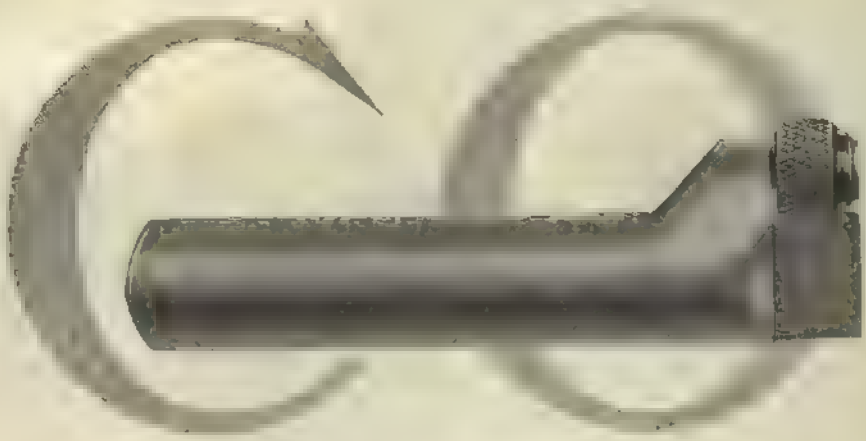
E S

ASK any **"COES"** user,—he will quickly enthuse you,—for he is satisfied. Thus **"COES"** users often are,—without their knowing it, our best salesmen,—for wherever you find contented, delighted motorists, there you will find **"COES"** enthusiasts,—ever ready to testify to its merits, and to pledge allegiance to THE KING OF WRENCHES.—the **"COES"**!

Correspondence Solicited!

WORCESTER, MASS.

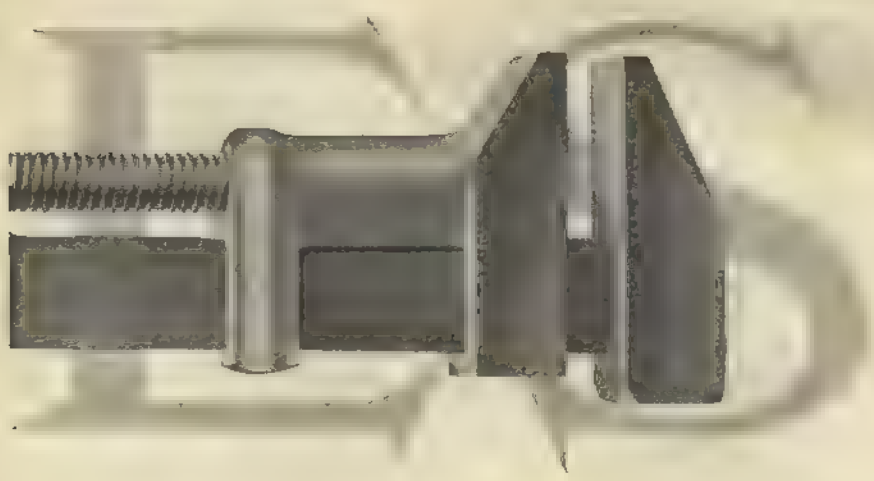
John H. Graham & Co., 113 Chambers Street, New York City



The Million Wrench

¶ The opinions wrench users have of the QUALITY of the COES is indicated by the number made and sold each year, viz.:— OVER ONE MILLION. This endorsement is worth more than the wrench maker's claims, for it's the testimony of an army of users,and not the argument of the manufacturers.

¶ Although the annual output is a million, there are still a few prospective buyers for the best wrench, and that's the reason we advertise! It isn't necessary to attempt to convince our old patrons, for they already are our best advertisement, for the motto of the "COES" army of wrench users is—"ONCE A **'COES,'** USER, ALWAYS A **'COES'** ENTHUSIAST!!"



¶ There is no other steel-handled wrench like the "COES"—for it is a tower of strength. It's made for good, hard work—the harder, the better! It's 30% stronger than others. If you are not acquainted with "COES" construction and superiority—now is the time to become converted.

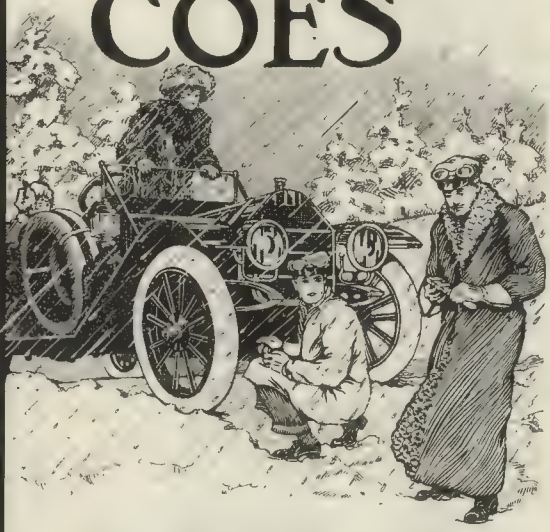
¶ If this advertisement alone is not sufficient, write for our printed matter containing illustrations and detailed information.

COES WRENCH CO.

WORCESTER, MASS.

AGENTS: J. C. McCarty & Co., 21 Murray Street, New York City
J. H. Graham & Co., 113 Chambers Street, New York City

EMERGENCY BRINGS OF COES



THE INVESTMENT IN A "COES" WRENCH CLOSES THE AVENUE TO FUTURE REGRET!

OUT THE MERITS A WRENCH

The Art of Being Certain

The successful man doesn't *guess*,—he *knows*, and he *knows* because he takes the trouble to *find out!* Ever notice how many real successful mechanics use the **"COES" WRENCH?**

Why? Because they've found out through experience that the **"COES" WRENCH** means a wrench of long, reliable service and highest ultimate economy,—he knows that the imitations are not just as good, nor anywhere near as good,—knows that the original superiority of the **"COES"** is as apparent to-day as before its appearance and brand were so widely imitated.

Imprint the brand name **"COES"** on your mind, and *get it*,—insist on it, for it's the wrench without the shoddy, made to stand hard work and any test, however severe,—stands heat or cold, moisture or acids,—equal to any emergency.

If you want the real thing in a screw wrench get the "COES," -the 16 inspection, 30% stronger wrench, —the wrench with the sale of a MILLION, annually!

COES WRENCH CO. :: Worcester, Mass.

AGENTS:— J. C. McCarty & Co., 21 Murray St., New York.
John H. Graham & Co , 113 Chambers St., New York.

1911 DIETZ

Oil, Gas, Electric LAMPS

THE Dietz leaders for 1911 will be the new DIETZ "ROYAL" STEEL LAMPS for commercial vehicles, and the DIETZ "VICTOR" close-coupled headlight. In addition, the Dietz line will include the square and round oil and oil-electric side lamps already so well known, with improvements of detail. The familiar and reliable "DAINTY" tail lamp and the Dietz "HANDY" generator will likewise be continued. On this and the next page specifications are given.

Dietz "VICTOR" Headlights

Close coupled, with shell, flare and back in one piece; short focus lens mirror readily removed by undoing four accessible screws; removable front glass held by screws; cast sockets with inside stiffening plates; cast hinges; ventilator drawn in one piece with inside draft deflector.

Prices:

6-inch	Lens Mirror	- -	$21.00 per pair
7-inch	" "	- -	25.00 " "
8-inch	" "	- -	30.00 " "

Dietz "ROYAL" Steel Lamps

A new line designed expressly to endure the vibration of commercial vehicles; two side sockets riveted through stiffening plates; removable aluminum reflector and front glass; oil founts held by rigid four-point catch of new design. Price, $15.00 per pair.

DIETZ "ROYAL" JUNIOR, smaller and less expensive than the "ROYAL," Price, $7.00 per pair. ROYAL STEEL TAIL LAMP, designed somewhat like the "DAINTY" tail lamp, Price, $3.50.

STERLING JUNIOR

"ROYAL" STEEL LAMP

1911 DIETZ

Pleasure, Commercial LAMPS

Brass Side Lamps

The square lamps, "STERLING," "STERLING JUNIOR" and "QUEEN" are continued with an improved anti-rattling oil fount catch.

The round lamps, "REGAL," "IDEAL" and "ORIENT," are continued for both pleasure and commercial vehicles, the latter having two side sockets. The "DAINTY" is continued in both side and tail lamp styles.

Electric Attachments

Square and "DAINTY" tail lamps are fitted in combination oil-electric styles when so ordered. A new square electric lamp is added to the line. By using the "COMET" electric burner any of the round lamps, including the "ROYAL" may be adapted to electricity.

The "VICTOR" headlight is fitted with parabolic reflector for electricity when ordered.

Finishes

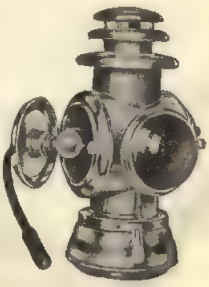
Regular finishes are Black Japan for the steel lamps and polished brass, gun metal, nickel and black nickel for all styles of brass lamps.

Dietz "HANDY" Generator

The round style of this generator is continued from 1910, no water jacket being used. This is one of the simplest and most dependable generators on the market.

See us at the Madison Square Garden Show, Space 189

R. E. DIETZ COMPANY
60 Laight St., NEW YORK CITY

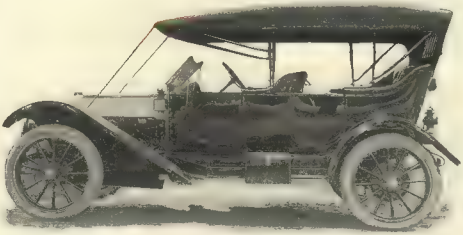


"DAINTY" TAIL LAMP

The Self-Starting

Not an Extra

See them at the New



MODEL 26

The car that created a demand

Two Different and Distinct Types

SPECIFICATIONS

Motor —Six cylinder, water-cooled, 4″ bore, 5″ stroke, cylinders cast in blocks of three, valves on opposite sides, 40-45 H. P.

Lubrication —Splash system.

Ignition —High-tension magneto, dual system, battery for starting.

Clutch —Multiple disc in oil.

Transmission —Selective sliding gear, three speeds forward and reverse; mounted adjoining differential, rear axle unit.

Brakes —Double expanding, dust-proof 14″ diameter, 2″ face.

Wheelbase —124″.

Tires and Rims —36 x 4″ demountable.

Steering Gear —Irreversible 18″ notched steering wheel.

Gasoline Tank —17 gallons, gravity feed, 2½ gallons always in reserve.

Springs —Front, semi-elliptic, 39x2″; rear, full elliptic, 40 x 2″; double scroll ends.

Finish —Golden brown, blue black or McFarlan green.

Equipment —Top, five lamps, Prest-O-Lite tank, demountable rims, nickle mounting, compressed air starter, jack, pump, and tool kit.

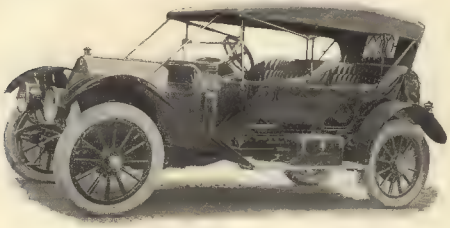
Price —$2100.00

McFarlan Motor Car Co.

McFARLAN SIX

Regular Equipment

York and Chicago Shows



MODEL 38

for a Medium-Priced Six

Write for Agency Proposition

SPECIFICATIONS

Motor —Water-cooled, six cylinders, 4½" bore, 5" stroke, cylinders cast in pairs, valves in the head, 55-60 H. P.

Lubrication —Circulating splash system.

Ignition —High-tension magneto, dual system, battery for starting.

Drive —Straight line drive.

Clutch —Multiple Disc in oil.

Transmission —Bolted to crank case, unit power plant.

Brakes —Expanding and contracting, 14x2".

Wheelbase —128".

Tires and Rims —37x4½" tires, demountable rims.

Steering Gear —Irreversible 18" notched steering wheel.

Gasoline Tank —17 gallons, gravity feed, 2½ gallons reserve.

Springs —Front, semi-elliptic, 39x2"; rear, full elliptic, 40x2", double scroll ends.

Finish —Golden brown, blue black or McFarlan Green.

Equipment —Compressed air self-starter, Warner speedometer, windshield, top and top hood, tire irons, Truffault-Hartford shock absorbers, demountable rims, five lamps, Prest-O-Lite tank, pump, jack, and tool kit.

Price —$2750.00.

Connersville, Indiana

RAYFIELD

The Better Carburetor

1911
Has Been a Rayfield Year

Twelve months ago we told you what the Rayfield **COULD DO**—to-day we have the pleasure of putting before you a record of what the Rayfield **HAS DONE.** It is a carburetor record unparalleled in the history of the Automobile Industry.

The Perfection of Design and Construction of the Rayfield Has Made it a Winner

Rayfield Savannah Record

Vanderbilt Race.
Winner, Mulford—48 H. P. Lozier, Rayfield equipped; 291.36 miles at average of 74.07 miles per hour. Average for 205 miles, 74.9 miles per hour, faster time than world's record. All Vanderbilt records broken. DePalma, Mercedes, Rayfield equipped, second—only 2 minutes behind Mulford. Grant, 46 H. P. Lozier, Rayfield equipped fourth—only 5 minutes behind Mulford. Fourteen cars entered, 4 Rayfield equipped, 3 winners. DePalma secured fastest lap. Rayfield only commercial carburetor that ever won Vanderbilt. Also only American carburetor ever used on foreign cars in Vanderbilt.

Savannah Challenge Trophy Race.
First, Hughes, Mercer, Rayfield equipped. Time, 195 37.92—new world's record for 300 Class Car. Fastest lap, Barnes, Mercer, Rayfield equipped.

Grand Prize Race.
DePalma, Mercedes, Rayfield equipped, third. Mulford in 46 H. P. Lozier was leading field of special foreign racing creations with only two laps to go when put out by an accident.

Other 1911 Winnings

Indianapolis Speedway, May 30th.
Mulford, stock Lozier, 500 Mile Race, averaged 74.7 miles per hour. Fastest laps, Belcher, stock Knox car, actual running time average 82.6 miles per hour.

Algonquin Hill Climb, June 8th.
Juggernaugher, Chase Car. Event 3 E, defeated 8 starters. Event 3 C, Rayfield equipped cars finished 1, 2, 3, 4, and 9 Class B, 451-600 displacement, Morris, Falcar, 1st.

Elgin National Road Races, August 26
Mulford in Lozier made seven fastest laps and broke all Elgin records.

Fairmount Park, Philadelphia, Oct. 7th.
Mulford, Lozier, 600 Class event, first. Also ran two fastest laps made by any American car regardless of class.

Chicago Motor Club Fuel Economy Test, May 25th.
Chalmers "30," 192 miles on 13 gallons of kerosene (44 gravity), average 14.8 miles per gallon. Hupmobile, 2024 miles on 44 gallons gasoline, average 354 miles per gallon. Rambler, 102 miles on 12½ gallons gasoline, average 15½ miles per gallon. Rayfield equipped cars in this run used an average of nine gallons less fuel than the average of other eighteen cars.

Chicago Motor Club Economy Run.
Chicago-Cincinnati and return. Falcar, using BENZINE averaged 18.6 miles per gallon for 679 miles. Total fuel cost $2.85.

Milwaukee Motor Speedway, June 20-21.
Burman, Mercedes, won Class D Event. Free-for-All 5 mile race. Pierce, Falcar, second 10 mile handicap. Juggernaugher, Chase, third 5 mile non stock event. Burman, Mercedes, defeated 120 H. P. Benz, 5 mile special match race. Pierce, Falcar, won 10 mile handicap. Juggernaugher, Case, second, 5 mile Class C, non-stock event. Jones, Case, second, 50 mile race.

Hawthorne Race Meet, June 10th.
Juggernaugher, Chase, won 10 mile Free-for-All

Savannah Challenge Trophy Race.
First, Hughes, Mercer, Rayfield equipped. Time, 195 37.92—new world's record for 300 Class Car. Fastest lap, Barnes, Mercer, Rayfield equipped.

Grand Prize Race.
DePalma, Mercedes, Rayfield equipped, third. Mulford in 46 H. P. Lozier was leading field of special foreign racing creations with only two laps to go when put out by an accident.

Omaha Motor Speedway, June 9th.
Pierce, Falcar, 2 firsts, 2 seconds, broke all Omaha track records, one mile in 57 seconds. Won 50 mile Free-for-All for Omaha Speedway $500 cup. Won 10 mile 450 Class race.

Yale Hill Climb, June 10th
Belcher, Knox, won Class C event.

Omaha, October 4th and 5th.
Billy Pierce, Colby, won every race he was allowed to enter. Won Omaha Championship $500 cup.

Commercial Vehicle Reliability Run.
Chicago-Detroit and return. Mais truck, 6.6 miles per gallon, six gallons less than nearest competitor. Nelson LeMoon truck, winner Class 4-K, 32 gallons gasoline—eleven gallons less than nearest competitor. Lauth-Juergens truck, excellent showing for economy. No Rayfield equipped trucks had carburetor trouble.

Chicago Motor Club Motor Truck Demonstration.
Chicago-Detroit. Mais truck, perfect score. Nelson LeMoon and Lauth-Juergens trucks, winners. Two Stegeman trucks, perfect scores.

Maine Automobile Association Hill Climb, June 17th.
Four firsts out of nine events. Time prize won by Belcher in Knox Car. Record 49 2/5 seconds.

Amarillo, Texas.
Won 30 mile Free-for-All. First and second in 30 mile race. Second in 100 mile race.

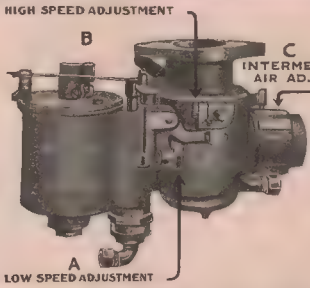
Springfield, Illinois, October 7th.
Won 5 mile Free-for-All Handicap. Second in Illinois Club Trophy Championship Race.

Peoria, Illinois, October 13-14.
Won 2 mile Stock Touring Car Race. Second in 5 mile non-stock race. Second in 10 mile Free-for-All. First in 10 mile non-stock race.

Note the simplicity of the Rayfield on opposite page

RAYFIELD

The Better Carburetor



The Rayfield has but three adjustments—low speed—high speed—and automatic air Governor which gives perfect control at intermediate speeds

What You Get With the Rayfield

Power—Speed—Economy—Flexibility and Simplicity

It doesn't make any difference what car you have—it doesn't matter what the temperture is—whether you have high test gasoline or low—you may be in high altitude or low, the Rayfield will do just what we claim Render you

Absolutely Perfect Service

Whether your car cost $600 or $6,000 it ought to be Rayfield equipped—it will run better act better and make you feel better. There is a satisfaction in knowing you have the best there is.

Don't you want us to send you the Rayfield Catalogue?

Findeisen & Kropf Mfg. Co., 21st and Rockwell Sts., Chicago

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997 Woodward Ave., Detroit, Mich.
Eastern Representatives, GEORGE SUMNER, Inc., New York City, N. Y.

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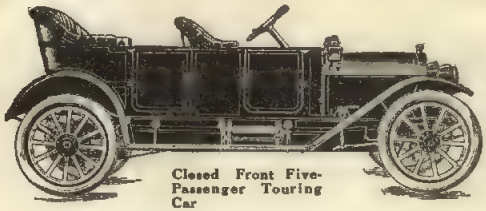
THE MARMON

"The Easiest Riding Car in The World"



Closed Front Five-Passenger Touring Car

Results:

The Marmon, a comparatively small car, rated at 32 h. p. holds more long-distance racing records than any other car in the world, including many records in free-for-alls and the big-car classes.

The finest of materials and the most thoroughly accurate workmanship enter into the Marmon, as a matter of course.

SOME OF THE MARMON VICTORIES:

Savannah Challenge Trophy—Savannah road course, Nov. 11, 1910. 276.8 miles in 263¾ minutes 63 miles per hour, without a stop.

Cobe Cup Race—Indianapolis Speedway, July, 1910, stock chassis up to 600 cu. in. 200 miles in 163 min. 26.1 sec. Broke record over 10 min. 73.47 miles per hour. Marmon first with two tire stops, Marmon second, one tire stop.

Wheeler & Schebler Trophy—Indianapolis Speedway, May 1910, open up to 600 cu. in. 300 miles in 166½ min. 72 miles per hour. One stop for fuel.

Vanderbilt-Wheatley Hills Trophy—Autumn of 1909, stock chassis 231 to 300 cu. in. 189.6 miles in 190 minutes without a stop. 59.87 miles per hour.

Atlanta Speedway Trophy—Atlanta Speedway, May, 1910. 200 miles in 182½ min. without a stop. 65.4 miles per hour.

Atlanta A. A. Trophy—Atlanta Speedway, autumn, 1909, 120 miles in 109 minutes, without a stop. 66.05 miles per hour.

Remy Grand Brassard and Trophy—Indianapolis, July, 1910, 100 miles in 80 min. 40.7 sec. 74.38 miles per hour Marmon first with two tire stops; Marmon second without a stop.

Remy Grand Brassard and Trophy—Indianapolis, May, 1910. 50 miles in 42¼ min. 70.58 miles per hour. Marmon first and second.

Vanderbilt (Donor's Trophy)—Autumn, 1910. 278.08 miles in 256 min. 23 sec

Los Angeles Grand Prize—L. A. Motordrome, April, 1910. Stock chassis up to 300 cu. in. 100 miles in 76¼ min., without a stop. 78.6 miles per hour. Breaking world's record regardless of class. Marmon "32" with 318 cu. in. displacement.

Two Hours' Free-for-all—Los Angeles Motordrome, April, 1910. 143 miles in 120 min., without a stop. 74½ miles per hour.

Fifty Miles Stock Race—L. A. Motordrome, April, 1910. 50 miles in 39 min. 53.55 sec., without a stop. 75.2 miles per hour. Marmon first and second.

Hundred Miles Stock Race—L. A. Motordrome, April, 1910. 100 miles in 85 min. 22 sec., without a stop. 70½ miles per hour.

Ascot Trophy—Ascot Horse Track, April, 1910. 100 miles in 103 min. without a stop. 58.25 miles per hour.

Ascot Fifty Miles—April, 1910 50 miles in 50 min. 16 2-5 sec 59.82 miles per hour

New Orleans Prize—Horse Track, November, 1909 100 miles in 107 min without a stop. 56.23 miles per hour.

New Orleans Fifty Miles—Horse Track, November, 1909. 50 miles in 54 min. without a stop. 55.55 miles per hour.

Kane County Trophy—Elgin Road Course, August 26, 1910. 169 miles in 184 min. 46 sec. 55.1 miles per hour.

Atlanta City Trophy—Atlanta, November 4, 1910. 200 miles in 171 min. 13 sec. 70 miles per hour.

Savannah Challenge Trophy—Savannah Grand Prize Road Course, November 11, 1910. 276.8 miles in 263 min. 39.98 sec. Average 63 miles per hour. Marmon first without a stop. (World's record for non-stop road race.)

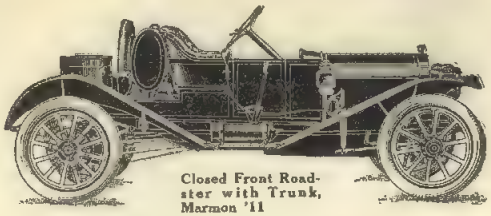
Marmon cars have won many five, ten, fifteen, twenty and twenty-five mile races in the meets at Indianapolis, Los Angeles and Atlanta.

NORDYKE & MARMON CO. (Estab. 1851) Indianapolis, Ind.

Licensed under the Selden Patent *Sixty Years of Successful Manufacturing*

THE MARMON

"The Easiest Riding Car In The World"



Closed Front Roadster with Trunk, Marmon '11

Reasons:

It is the easiest riding car in the world, which means comfort to driver and passengers and great durability of mechanism. The car has made and lives up to this reputation for easy riding as testified to by all Marmon owners.

It is an evolution of the highest degree of motor car engineering ability.

It is thoroughly rational in power, weight and carrying capacity.

A car with similar power and carrying capacity cannot be designed to weigh less and still maintain a proper factor of safety at all speeds.

Any greater weight in a car of this size would be entirely unnecessary, and a detriment rather than an advantage.

The design is strikingly simple, thus minimizing weight, loose and wearing parts, and probabilities of getting out of order.

Extreme accessibility of all units and parts and complete protection from dust and mud have been successfully accomplished. No car has ever been designed with more thought bestowed upon these qualities.

NORDYKE & MARMON CO. (Estab. 1851) **Indianapolis, Ind.**

Licensed under the Selden Patent *Sixty Years of Successful Manufacturing*

Their great financial stability, coupled with their thorough knowledge of standardized commercial motor vehicle manufacture make the product of this factory one in which the utmost confidence regarding efficiency and permanence may be placed.

Correspondence with dealers and business men interested is solicited. "Built for Business by Business Men."

Universal Motor Truck Co.

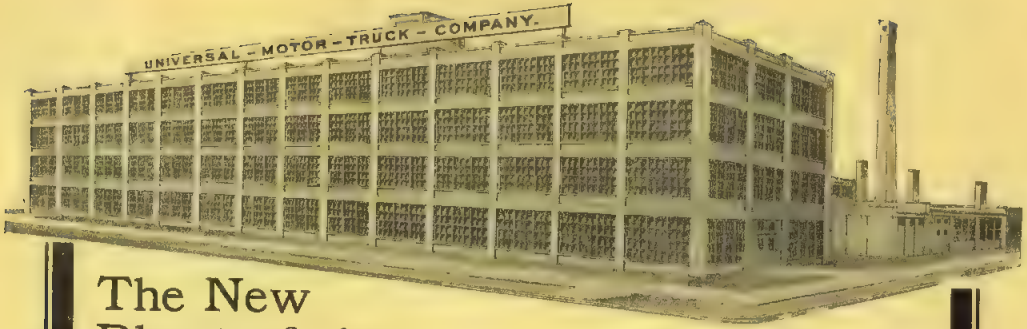
505 Theodore Street, Detroit, Mich.

Universal Motor Truck Co.,
505 Theodore St., Detroit, Mich.
Please send full information.

Name

Address

This is a photograph of the 3-ton truck.



The New Plant of the Universal Motor Truck Co.

THE Universal Motor Truck Co. of Detroit, Michigan, announces the completion of its new quarter-of-a-million-dollar plant at Farnsworth, Theodore and Dequindre Streets.

Universal Motor Trucks will be made in 1½-ton and 3-ton sizes—deliveries begin March 1st.

The organization, though new, is composed of expert motor truck builders and business men who have already used and expect to continue to use a large number of commercial motor vehicles.

"COES

A GOOD WRENCH AT A FAIR PRICE

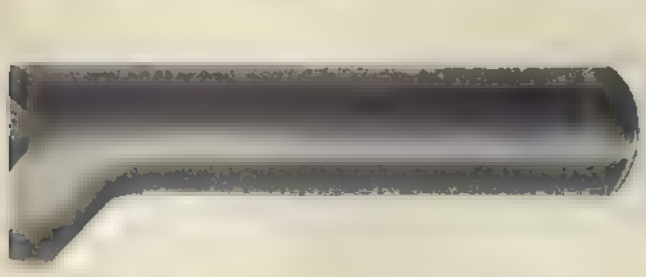
There, in seven words is the secret of the success of the "COES" WRENCH, and because it is good, and because it sells at a fair price its sales have increased year after year.

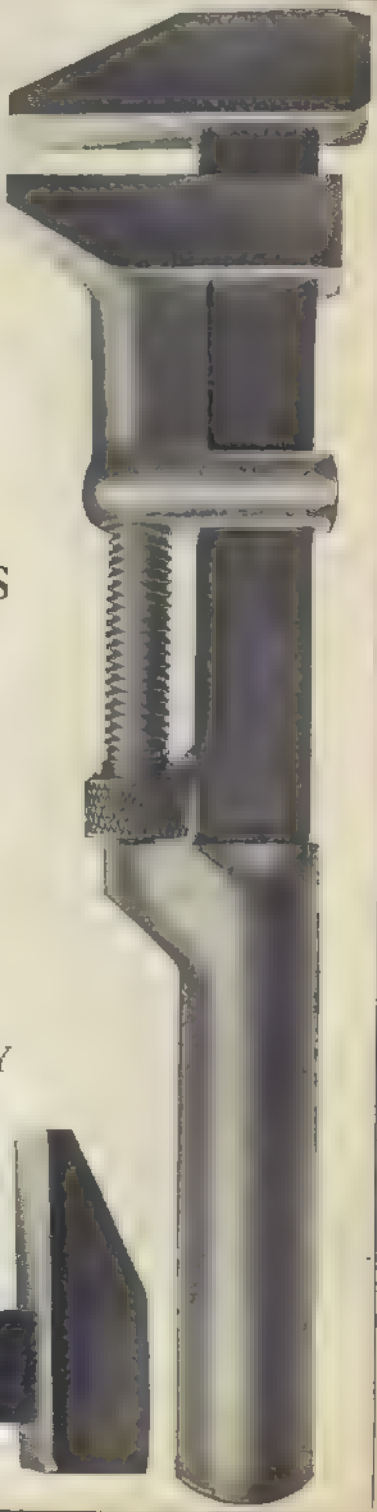
The "COES" WRENCH is a motoring necessity, absolutely essential to the safe and complete operation of any motor car.

Its excellence lies in the all-around excellence of its construction. The steel that is put into the "COES" WRENCH and the method of hardening, riveting and reinforcing every part make it practically unbreakable,—it's stiff and rigid, and it's sure to stand up under the most trying conditions.

A MILLION AND MORE IS OUR ANNUAL OUTPUT

AGENTS:
J. C. McCarty & Co., 21 Murray Street, New York City
John H. Graham & Co., 113 Chambers St., N. Y. City





ES"

A "COES" WRENCH IS THE STRONGEST

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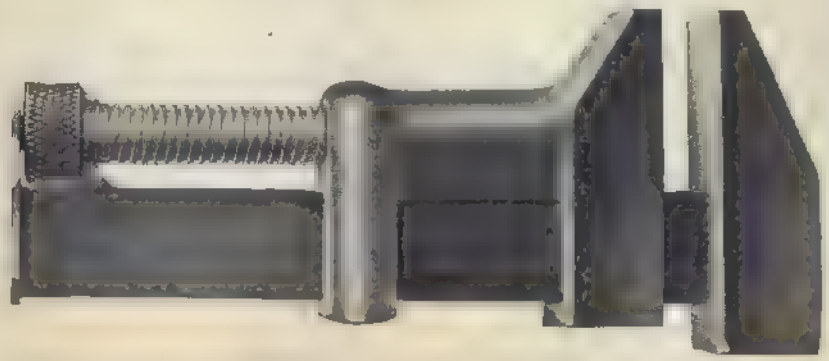
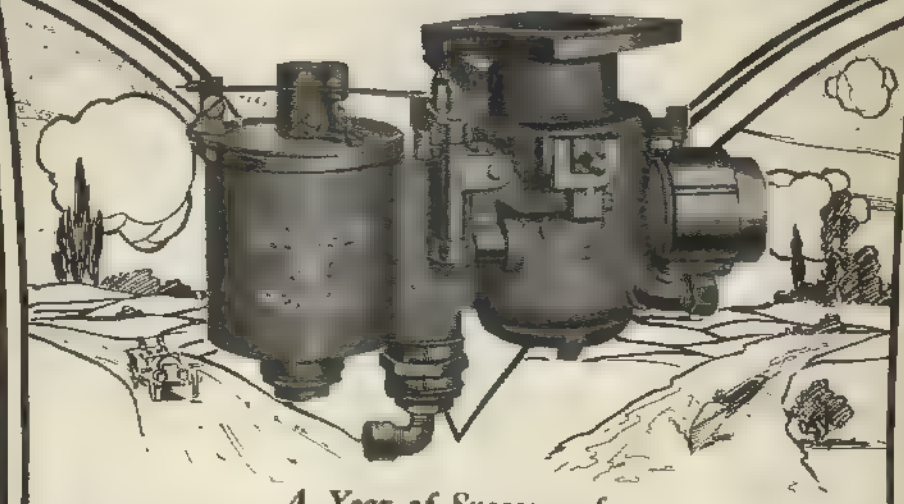
MAY WE SEND OUR PRINTED MATTER?

COES WRENCH COMPANY
WORCESTER, MASS.



"More Miles Per Gallon"

RAYFIELD



A Year of Successes for

The RAYFIELD CARBURETER

In speedway racing and all work in touring in commercial car work the Rayfield has made in its first [illegible] ever before [illegible]

The reason is that the standard of the most scientifically designed carbureter in the world. There's a reason for it. Test shop practice and our big factories insures that every carbureter [illegible] and absolutely without mechanical flaw before it is shipped.

ECONOMY POWER—RELIABILITY

are what you want. Search no more for what you get in the Rayfield.

The proof? A Rayfield stock carbureter was on the car which made the fastest [illegible] mile and half mile.

A Rayfield [illegible] carbureter was in the car which made the fastest mile of the race.

Seven of the Rayfield stock carbureters [illegible] covered the [illegible] distance.

The Rayfield stock chassis car averaged 14 miles on a gallon of gasoline.

A winner on water. On motor boats also, the Rayfield has taken a decisive lead.

In the recent Motor Boat Races at Gratia June 10, Rayfield equipped boats ran first, second, third, fourth and fifth [illegible] the winner averaging 38 miles an hour for 10 miles.

Best running record of the season to date. The Rayfield equipped cars and boats have been in front.

Write today for our descriptive booklet and learn the reason why.

FINDEISEN & KROPF MANUFACTURING COMPANY

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Aaten & Goulding Co., Worcester, Mass.
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Rambler Automobile Co., Charlotte, N. C.

Crawford 1912 Models

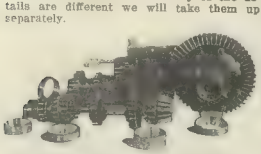
Crawford 12-40

The Crawford Automobile Company, of Hagerstown, Md., owes its success to the superior workmanship and construction which has been of the highest grade obtainable. The cars manufactured by this up-to-date firm have always represented the best obtainable in materials and design.

The keynote of Crawford superiority has always been safety to the rider. To this end, every part of the mechanical construction of Crawford cars has been given the most careful consideration and no feature which insured safety has been eliminated in successive yearly models, but rather, other features have been added.

The 1912 models are no exception to this rule and show many improvements tending to the aforementioned end. Nor is this the only merit shown in these models. Beauty of design, an object sought after by every thinking manufacturer, has also been the subject of much deliberation, and Crawford 1912 models will not be found lacking in this respect.

The 1912 line discloses three models, viz., the "12-30," "12-35" and "12-40." These are somewhat similar, but as many of the details are different we will take them up separately.



Gears, differential and roller bearings used in Crawford "12-30."

The Crawford "12-30."

The bodies fitted to this chassis are either of the touring car pattern or roadster. All bodies are of sheet steel over a wood framework. In the construction of the body frame, no nails are used, screws being employed exclusively. The iron beading is soldered in place, insuring a good lasting job. The body frame is so designed that all places where any strain is liable to occur are reinforced by heel pieces or braces of efficient design.

Motor.

The motor used in this model is the well-know Continental Model E, which is of four cylinder, four cycle type. The engine is mounted on a sub-frame, riveted to side plate. All valves of the motor are enclosed by a removable hand plate. A Continental double force-feed plunger type, ball check lubricator is used.

Showing differential and removable cover plate.

The Continental Motor, Model 8, used in Crawford cars, is manufactured by the Continental Motor Manufacturing Company, Muskegon, Mich.

It is 4½ x 5½ in., cylinders cast in pairs, valve mechanism entirely enclosed by two removable side covers. Valves all on one side, mechanically operated by a single cam shaft. Water jacketed heads are cast separately, retained by removable screws.

The crank case, of high grade nickel-aluminum alloy, is split in the middle to give access to all adjustable main bearings carried in upper half.

The connecting rods are of I-beam section, made of special grade carbon steel. Cam shaft is drop forged, cams integral with shaft. Crank shaft is a high grade drop forging mounted on three long bearings, with special thrust bearings at front and rear ends.

Model 12-30 Touring Car, which is being featured by the Crawford Automobile Company, for the season of 1912

Two patented plunger pumps, located on either side of the mid-cam shaft bearing supply oil under pressure to the helically cut timing gears and to the rear bearing. This oil drains back into the splash section. Springs keep the upper ends of these pumps in contact with two cam shaft eccentrics. Oil is drawn in from the oil pan, filtered and pumped into circulation. The middle bearings are well taken care of by a splash system. The splash section has four separate compartments to prevent the possibility of oil running to either end of the motor when on grades. By means of overflow or stand-pipes a constant level of oil is always maintained. The excess oil which overflows is again filtered and recirculated. The dippers on the lower half of the connecting rod bearings splash oil through a hole in the bottom of each enclosed valve chamber.

Clutch and Transmission.

The clutch is contained in the fly wheel and is of the cone type, leather faced. Under the leather facing are eight flat springs which insure easy engagement. They can be adjusted by nuts which are get-at-able from the inside rim of the clutch cage.

The universal joint connecting the clutch with the transmission, consists of a split ring and removable bushing, hardened and ground. The whole joint is enclosed in a leather boot which is filled with grease.

The transmission gear set is a three speed forward and one reverse unit, being housed integral with the rear axle and differential. The gears are of wide face, the width having been increased this year. The front edges of the gears are rounded so as to avoid chipping the edges when they are suddenly brought into engagement. All shafts revolve in Timken roller bearings.

The gear changes are made by a ball topped shift lever, which moves in an H quadrant. The gears are automatically locked, so that only one set of gears can be engaged at a time.

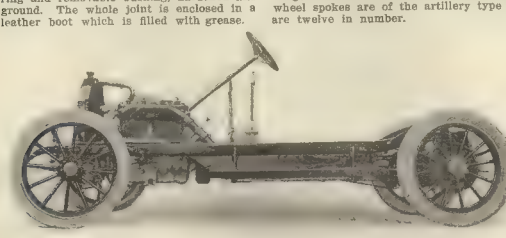
Axles.

The front axle is an I-beam section member, being dropped between the spring seats.

The rear axle is of the full floating type. The differential housing is supported by a suspension rod. The transmission case has a side inspection plate, and both transmission and differential housings are provided with top hand plates. The rear axle is full Timken roller bearing.

Wheels.

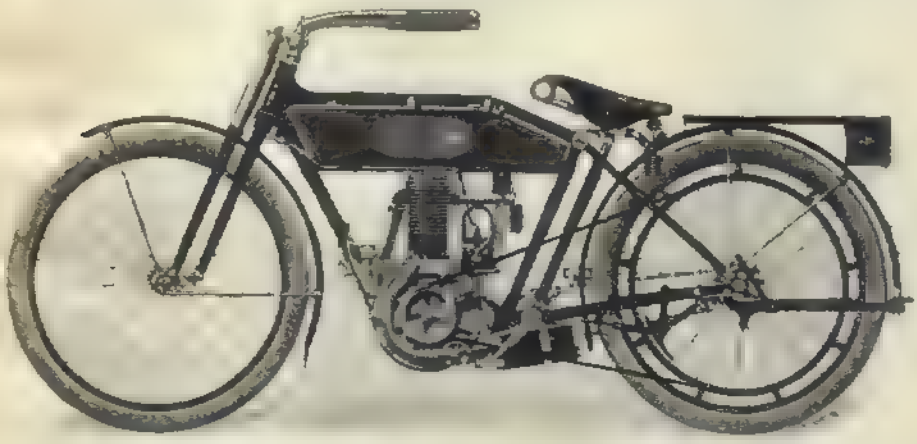
The wheel bearings are annular ball and the wheel driving clutches are of jaw type, the spiders being drop forged steel and the flange of steel. There are four fingers. The wheel spokes are of the artillery type and are twelve in number.



Side view of stripped chassis of Crawford 12-30 model showing the location of motor and gear shift lever

The 1911 R-S Motorcycle

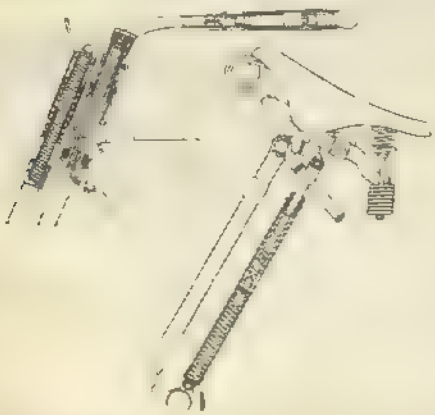
After having made many exhaustive investigations and tests, the Reading-Standard Co., of Reading, Pa., has brought out for 1911 what is practically a new motorcycle, following along the best accepted lines of American and foreign manufacture. Many original features have been embodied in the new model, all of which have been thoroughly tried out.



The 1911 R-S Motorcycle, 4 h. p. motor, 3 11-32 inch bore, 3 15-32 inch stroke, 30.17 cubic inches piston displacement, 26 inch camel back frame, 1¾ inch flat belt drive; 28 inch wheels; 55 inch wheel base, 2½ inch G & J tires; two sets of brakes.

The motor is rated at 4 h. p., and has a bore of 3 11-32 inches and a stroke of 3 15-32 inches, giving 30.16 cu. in. piston displacement. The cylinder and explosion head are cast in one piece with double pocket valve chambers.

The explosion chamber is machined on the inside, to give uniform explosion and compression. The radiating fins are long and numerous. They are cast of a special grade of gray cast iron and are carefully heat treated before being machined, in order to prevent distortion.



Spring Fork and Seat Post Shock Absorber used on the 1911 R-S machine

Piston is dome shaped and carries three slightly eccentric rings. The wrist pin is hollow and of large size. It is clamped fast in the connecting rod and turns in the piston bosses which gives about 25 per cent. more bearing surface than is obtainable in any other way. The connecting rod is drop forged with heavy phosphor bronze bearing on the crank pin. The fly wheels are of large size, carefully machined and properly balanced, and are cast so as to bring the weight chiefly in the rims. The main and crank shafts are of steel, hardened and ground, pressed into the fly wheels with flanges and riveted fast with pressed fit rivets, excepting one end of the crank shaft which is a ground taper fit and held in place by heavy nut and lock washer.

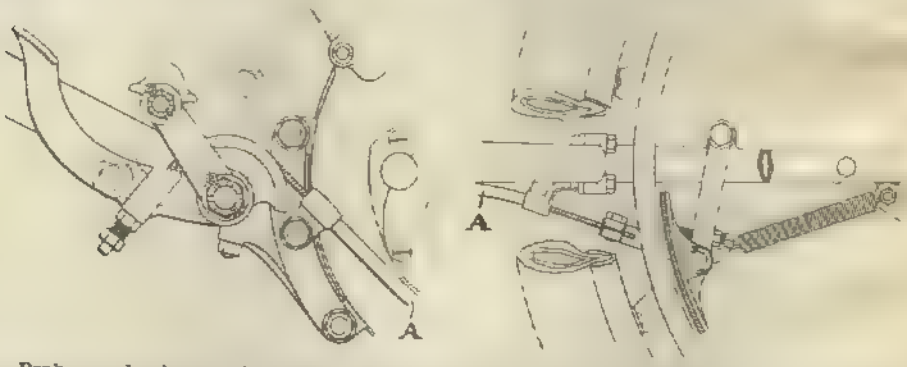
Two imported ball bearings are used on the main shafts. Both inlet and exhaust valves are of ample size with heavy stems and are interchangeable. The lift rods are provided with adjustments and move in long hardened and ground steel bushings. Each cam gear, cam and shaft is made from one piece of nickel steel, hardened and ground so that in assembling there is no danger of "wrong timing." The cam case is now made integral with the motor base. The compression release cam is a steel forging, hardened and ground, and acts directly upon the exhaust lift lever below the lift rod.

The crank cases are of aluminum, finished perfectly smooth on the outside, the bosses of the case bolts being thrown on the inside, thus giving a beautiful finish. Cases are fitted with oil gauge glass and gauge which shows clearly the oil level.

The magneto is the Bosch type "DA2", mounted on a bracket cast integral with the crank case, on the rear side of the motor, and held by a nickel plated brass strap,

which is tightened by one nut. The spark plug is mounted over the intake valve which insures cooling and gives perfect ignition.

The carburetor is mounted on the rear of the engine so that there are no obstructions on the front side of the cylinder to interfere with the air currents. The mounting of this motor is new, being supported by two lugs cast upon the case, which rests upon corresponding lugs on the frame brackets. It is firmly bolted to the frame by means of six heavy bolts, the removal of which allows the motor to be easily drawn out from the left hand side.



Brake mechanism used on the 1911 R-S motorcycle. Two independent sets of brakes are fitted—namely, the regular coaster brake actuated by the starting pedals, and a new type of foot controlled service brake. For details see text.

The transmission consists of an 1¾-inch flat endless belt. The motor pulley is of large diameter, flanged, and is leather faced. The rear pulley is also flanged. The braces with which it is fastened to the wheel rim are made integral with the pulley, thus doing away with loose parts and rivets.

The belt tightener is of new design, foot actuated and ball bearing. Tension is held by means of a ratchet and pawl which allows any degree of tension from an absolutely free engine to high speed requirements. Starting cranks and sprockets are drop forged and of extra heavy construction.

An adjustable foot rest is placed front of the motor which gives an easy riding position and carries the feet in a position which allows quick transmission and foot brake control. This foot rest not only provides ease and comfort in riding but also protects pedals and cranks against accidental breakage in falling, as the foot rest first strikes the ground and thus protects the whole machine. When riding with feet on foot rest, perfect control of machine is assured. The left foot is always in position to quickly and conveniently operate the belt tightener in either direction, and the right foot the service brake. The hands are thus left free to steer the machine and control the engine. There is no occasion to remove the hands from the grips at any time.

Two independent sets of brakes are fitted. In addition to the regular coaster brake actuated by the starting pedals, a new type of foot controlled service brake is fitted. This consists of a wide shoe, lined with "Raybestos," operated by steel wire cable passing through a guide tube, and is connected with a convenient foot pedal located on right side of machine close to the foot rest. This shoe makes contact with the inner side of rear belt pulley and is provided with all necessary adjustments to take care of all possible conditions. Brake pedal is also adjustable for all positions of foot rest.

The frame is of the camel-back type, giving an extremely low saddle position. The hanger is eccentrically mounted, which also assists in adjusting starting chain. A stop is provided on frame which prevents front fork turning too far, thus saving it from unnecessary strains and possible breakage of control parts.

The spring fork is of the R-S vertical action cushion type, improved and strengthened, the upper bracket being so formed that it makes a very convenient lamp bracket.

Handle bars and control are of a new patented design, the control being entirely concealed and out of danger from rough usage. There are absolutely no loose parts nor any lost motion in this control and it always remains stationary without shake in any position it is left. The right grip controls carburetor and compression release, the left the magneto advance. Rough rider grips are fitted. Handle bar is prevented from turning in the head by means of a heavy key.

A new patented spring seat post with a shock absorber is fitted. It contains two internal helical springs, one to carry the load and the other to catch the rebound, the tension of both being adjustable. The shock absorber consists of two plates clamped between a spring steel washer and leather friction washers which prevents too sudden action and helps check the rebound.

The mud guards are extra long and heavy. Each is supported by heavy braces. The front guard extends well forward of the fork and is supported by two braces at the front

end. All braces are held by nuts and lock washers.

The luggage carrier is of new design and large in size, riveted securely to the rear mud guard, the same braces being used to support both. These are exceedingly heavy and held in place by nuts and lock washers.

The stand is the R-S, improved, being much stronger than previously used and is held in position by a new spring clip fastened to the back end of the mud guard which permits stand to be operated without the use of the hands. This stand is semi-automatic in action, two tension springs being mounted on the sides to lift it automatically and help hold it in position.

The tool box is of metal, very large and lined with felt to prevent rattling of tools. It is mounted on a special bracket at the rear of the luggage carrier which is riveted to both luggage carrier and mud guard. This arrangement leaves the space above the gasoline tank entirely free and available for other purposes to the rider.

The tank is a double compartment tank of new design, carrying 1 2-3 gallons of gasoline and 1½ quarts of oil. Both gasoline and oil fillers are of large size and stand high above the tank so as to prevent slopping. Each cap is provided with a new system of venting which effectually prevents any leakage. Tank is supplied with a reserve compartment which always provides a reserve supply of gasoline, to obtain the use of which it is simply necessary (after exhausting the ordinary supply) to tip the machine down on its right side and immediately straighten it up again. Enough gasoline is then provided to drive eight or ten miles before becoming entirely exhausted.

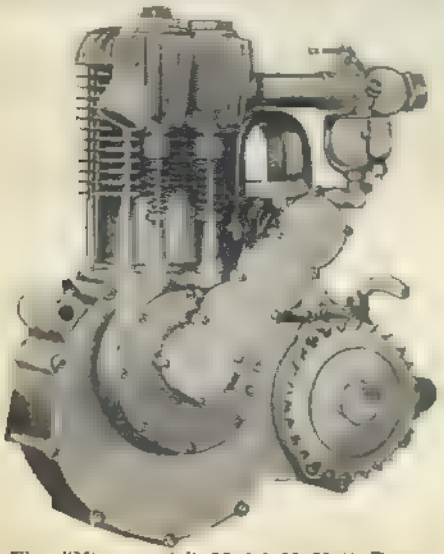
Semi-mechanical oiler is used with sight feed insuring positive lubrication.

The wheels are 28 inches, equipped with 2½-inch clincher tires; 36 extra heavy spokes and nipples are used in each wheel. Front hub is of heavy type with knockout axle. Rear hub heavy with coaster brake. Wheel base is 55 in. All nuts and bolts throughout the entire machine are positively locked by either lock washers or cotter pins. Oil caps are placed at every place requiring attention. The finish is Reading brown, striped.

THE "MINNEAPOLIS" MODEL N UNIT POWER PLANT

One of the most distinctive features of the new Minneapolis Model N motorcycle is its unit power plant. While the general lines of the motorcycle are not changed, the power plant itself is a radical departure from present practice. The power plant includes the motor, clutch, two speed gearing and connecting gears as one unit. The whole may be removed from the frame without taking apart and put back without making adjustments.

The motor is the result of over three years' labor and prolonged tests at the Minneapolis factory and is really the final launching of the designer's original plans for the Minneapolis two-speed. In the past three years the Minneapolis planetary two-speed gear has been operated successfully in connection with other motors. In the new motor this same gear, with a few improvements, is incorporated into the engine base in connection with a multiple disc clutch, which has also been thoroughly tried out.



The "Minneapolis" Model N Unit Power Plant.

As shown by the accompanying cut, an extension of the motor base forms a housing for a counter shaft on which is mounted the two speed gear. Compound gears connect the drive shaft and the counter shaft, and the disc clutch is mounted on the main drive shaft. Counter shaft and intermediate gearing, as well as main shafts, are mounted on Hess-Bright ball bearings.

The entire mechanism is enclosed by an oil tight cover. An oil window is provided on each side of the motor, one showing the amount of oil in the crank case and the other showing the amount of oil in the gear case, the two compartments being entirely separate.

The bore of the cylinder is 3½ in., the stroke 3¾ in.

The cylinder and head are two pieces, permitting of most perfect finish. Wide and thin flanges on cylinder give plenty of radiation. Flanges on head run lengthwise to afford better cooling. Mechanical valves with 1⅝ in. head are used. Schebler automatic carburetor with 1 in. throttle is used, and Bosch magneto ignition only will be used for 1911. Battery box in frame will be used for tool case and supplies.

One striking feature and the first to appear with this motor, is the beautiful

The 1912 Lambert Models

The 1912 line of pleasure cars manufactured by the Buckeye Manufacturing Company, of Anderson, Ind., will be confined to five models for the coming season.

With the Model 66-C as their leader, the light five-passenger touring car has been designed for the man with a family. It carries complete equipment in every respect. Large, roomy seats, luxurious appointments throughout, in fact, everything that goes to make up an ideal family car for touring purposes.

The Model 66-B is a four-passenger car with a detachable tonneau. It is especially built to satisfy the needs of the farmer or small merchant, who ofttimes finds it convenient to press his pleasure car into service as a light delivery wagon. With the tonneau removed, this car makes a most excellent roadster and is an "all purpose" car.

All Lambert cars are equipped with foredoors and the Model 66-A and 66-B with straight body lines. The friction system of transmission is maintained as in past years, and the above cars are equipped with the Lambert 35 h. p. motor

The Model 99-A is a large five-passenger touring car that is designed for the man interested in a machine of large proportions

The Model 99-B is of similar construction to the Model 99-A, with the exception that it carries a four-passenger torpedo tourabout body.

Models 99-A and 99-B will also carry full equipment in every respect. The gasoline tank is carried on the rear with an auxiliary tank under the seat. The well-known 40 h. p. Rutenber motor is to be found in these two models and needs no detailed explanation.

The Model 99-C is a roadster of snappy design, fitted with a body of torpedo design, trimmed in nickel, and completes the list of Lambert pleasure cars for the coming season. In addition to the full equipment, the roadster carries a 28 gal. gasoline tank and a 12 gal. oil tank, affording practically a season's supply of lubricant; each of these tanks carries a gage.

The general equipment will be genuine mohair top and cover, automatic, adjustable plate glass wind shield with ventilator, gas tank for the lights, oil lights, a speedometer, black enameled gas lights, tail light, tool and battery box, tire repair kit, tools, pump, and in fact everything down to and including the license number holder.

The Model 99-C is somewhat more elaborately equipped. Electric lighting is used throughout on this car, nickel trimmings, foot rails, demountable rims, top, wind shield, speedometer, extra tire and tire iron, and many minor appointments.

The Lambert patented friction system of transmission still remains one of the most salient features of the Lambert car. Its principle is the same as has been used for

Fig. 1. The three 1912 models of the Lambert friction drive automobile. Model 66-C is the leading car, being a light five-passenger touring car. The model 66-B is a four-passenger car with detachable tonneau, while model 99-A is a larger five-passenger car.

eleven consecutive years in pleasure car and commercial car manufacture by the Buckeye Manufacturing Company, they having been the originators of this type of transmission. The friction is applied by pressure on the foot pedals, which forces the extension shaft-carrying disc rearward,

Fig. 2 Lambert patented friction transmission, showing the arms for changing the position of the friction wheel and also showing the silent chain drive to the jack-shaft.

bringing the disc in contact with the cross-shaft friction wheel. When the foot pedal is released, a spring is so connected that the contact is broken and the friction disc is thrown away from the cross-shaft friction wheel.

Motor.

The Lambert 35 h. p. ball bearing motor with cylinders cast en bloc is described as follows: Bore and stroke 4½ in. by 4½ in., annular ball bearings throughout except on connecting rods where highest grade of Babbitt metal is used. The crank case is horizontally divided into halves, the upper containing all the bearings, and the lower forming the oil pan and reservoir. The crank shaft is a drop forging, ground accurately to a size of 2¾ in. in diameter with two main annular ball bearings. The connecting rods, adjustable at the lower end and bushed with Babbitt bearings, are drop forgings from the best open hearth steel.

The valves are enclosed by two steel plates, held in place by two thumb nuts which can be removed by push rod adjustment. On the right side of the motor are the valve stems, push rods and springs. The valves are one piece drop forgings. The cam shaft and cams, made of one piece, are enclosed and run in oil bearings. The ignition is by jump spark with the Remy dual system, using the standard Remy high tension magneto. The splash system of oiling is utilized with the help of a geared pump attached to the upper half of the crank case. The lower half has no parts of the working mechanism attached to it, being simply an oil reservoir with the necessary dividing ribs and oil duct to insure lubrication of all parts of the engine. The oil is pumped to the front end of the engine among the gears, and these gears throw the oil through the entire front of the crank case, insuring perfect lubrication of all gears and bearings. The excess oil flows to the end of the oil pan immediately under the front bearing, in which manner this pan is kept full of oil and thus supplies the rings and main bearings. A plain gage of the float type in the right side of the crank case shows the amount of oil in the reservoir.

The cooling of the motor is accomplished by a geared water circulating pump and the fan, which is driven by a belt on the pulley of the crank shaft. The fan is attached to the motor, making it very convenient for any adjustment of the fan belt.

The coupling attached to the fly wheel of the motor is telescopic in construction. It is absolutely rigid so far as transmitting the power from the motor to the disc wheel is concerned, but by the means of a flat spring any irregularities in the road of other distortions the car might be thrown into are taken up at this coupling point.

The motor is mounted on a three point suspension, which makes it impossible to throw the car into such a twist as to bind a single bearing on this shaft.

The cross-shaft bearings are mounted on gimbals. This is the only shaft that is used in the transmission device and operates parallel to the friction disc wheel.

Chassis.

The car is mounted on full elliptic springs at the rear, and semi-elliptic of ample proportions at the front.

The foot control of the 1912 Lambert car is very similar to that used in the 1911 car. The foot pedals are globular in shape and are of a cycle type, passing forward and back through the foot board, operated by ankle movements. The depression of one releases the contact of the other, this being automatic. The friction contact is brought about by pushing forward on the friction or clutch pedal and the screw take-up is very accessible and easily adjusted. The same take-up is found on the service

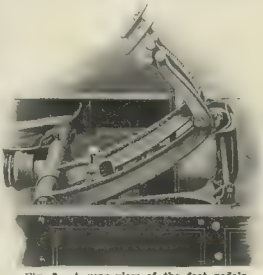


Fig. 3 A rear view of the foot pedals, one being the "clutch" pedal, and the other the service brake, showing heavy construction.

Fig. 4. Top view of stripped chassis, showing details of the operation of the friction drive transmission, chain drive to rear wheels, brake drums, and differential on the jack shaft.

or external brakes. The foot pedals, when applied, are held in place by an invisible ratchet.

The universal roller bearing hangers, which have been previously mentioned, permit the bearings to conform to all distortions of the frame, and carry the shaft on which is mounted the paper fibre friction wheel.

The end thrust bearings, placed directly in the back of the disc wheel, are 7¼ in. in diameter. This is sufficiently large to take up more end thrust than it is possible to put on this disc wheel. It consists of three plates. The center one contains seventy-two ⅛ in. steel balls imbedded in a bronze plate or retainer and is placed between two hardened steel plates. This bearing is thoroughly enclosed from dust.

Renolds Chain Drive.

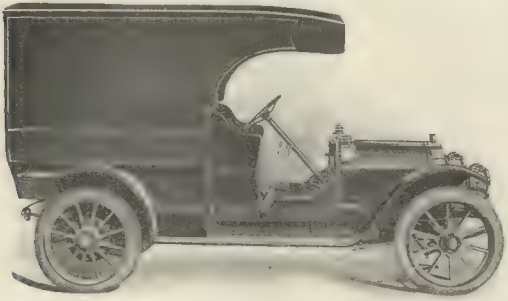
The Renolds silent chain drive is used for transmitting power from the jack shaft to the rear axle. This type of chain is used on all chasses. One of the selling arguments in favor of the bevel gear drive to the rear axle has been the fact that it is thoroughly enclosed from dust, and at the same time is noiseless. The Renolds type of chain is noiseless under all conditions. As the chain wears, it conforms to the sprocket so as to do away with the possibility of noise. This chain is enclosed in a dust-tight metal case, which is removable and makes an ideal form of drive to the rear axle.

Wheel Base.

The wheel bases of the various models are as follows: Model 99-A, 115 in.; 99-B, 117 in.; 99-C, 112 in.; Model 66-B, 107 in., and the Model 66-C, 112 in.

New Firestone Plant.

The magnificent new plant now occupied by The Firestone Tire & Rubber Co., of Akron, O., is in great contrast to the first plant. This company started to make tires less than a dozen years ago in the diminutive factory shown in the upper left corner of the picture, employing only a score of men. The new plant covers many acres of ground and contains what is said to be the largest tire building in the world employing thousands.



Spoerer Model 40-C equipped with delivery wagon body. This car sells for $3000; Model 25-A for $2000

Equipment.

The standard equipment consists of two large gas headlights, two side oil lamps, one rear oil lamp, gas generator, jack, pump, kit of tools, a tire repair outfit and a twenty-two gallon gasoline tank.

Model "40C" is obtainable in a five passenger Touring car at $3000, a Roadster at $2950, a Toy tonneau at $2900, a seven passenger Touring car at $3250, a Limousine at $4000, Landaulette at $4150 and as a delivery wagon at $3000. Fore door bodies $75 extra.

Model "25A."

Model "25" only differs from Model "40" in the motor. It has a motor of 4½ in. bore and 5¼ in. stroke. The valves are all on one side. Oiling system is the same as on Model "40;" also ignition is by Bosch magneto. The motor is hung on the main frame. A pressed steel cone clutch leather faced with springs underneath is used on this model. Two universal joints are used between the clutch and torsion tube which is anchored by a fork and the last cross member. The transmission and the rear axle are cast together making a very substantial construction.

Both brakes are 14 in. in diameter and of the internal expanding type. The front axle is of the Lemoine type and F. & S. ball bearings in the hubs.

Model "25" is made in a Roadster at $2000, a Toy tonneau at $2000, a five passenger Touring car at $2000, a Town car at $2600 and a Delivery wagon at $2000.

The wheel base on both models is 120 in.

In manufacturing these cars great attention has been paid to detail and finish, and as all bodies are made at the factory it is possible for purchaser to choose color and trimmings.

Fig. 3. Side view of Spoerer chassis, Model 40-C. Motor 35 h. p., wheel base 120 in., wheels 36 in.

1912 SPOERER MODELS

Carl Spoerer's Sons Company, of Baltimore, Md., is engaged in manufacturing both pleasure and delivery cars. The company has every facility in the way of up-to-date machinery and skilled mechanics and is prepared to supply cars on short notice.

For 1912 there will be two models, "40C," rating 35-50 h. p., and "55A," rating 25-35 h. p. The two differ only as regards the motor used.

Model "40C."

The motor has four cylinders, 4⅞ in. bore by 5½ in. stroke. The cylinders are cast in pairs with intake and exhaust valves on opposite sides. The pistons are of special cast iron and evenly balanced. The wrist pins are of tool steel, case hardened and ground with ample provisions for oiling. The connecting rods are drop forgings carefully machined and heat treated. The crankshaft is a heat treated hand forging and runs in large bearings made of the best white brass. Large size nickel steel valves ensure great flexibility and high speed of this motor.

The cams and camshafts are made of high carbon steel; all bearings and cam surfaces are hardened and ground. The timing gears are of cast steel and noiseless, same running under a constant stream of oil.

The crank case consists of two aluminum castings. The upper one has cast integral with it the suspending arms which bolt the motor to the sub-frame. The crankshaft is suspended from the upper half. Taking off the lower crank case does not disturb the crankshaft in any way. The lower half is cast in two compartments. The lower one is used as an oil well and the gear pump takes the oil from here and delivers it to the main bearings from which it is forced through the hollow crankshaft to the lower connecting rod bearings, and from there to the oil can splash through holes drilled in the connecting rods on the cylinder walls and to other rotating parts in the crank case.

Ignition, Cooling and Carburetion.

Ignition is by means of a Bosch dual system.

Cooling is effected by means of a big and efficient centrifugal pump to the cylinders, the water entering underneath the exhaust valves and leaving at the highest point. The water is cooled by means of a honeycomb radiator and a fan. The fan is attached to the crank case and runs on ball bearings. The fan belt adjustment is made by an eccentric bearing.

Should the pump get out of order, which is not likely because of its good construction, the piping is large enough to permit of the thermo-syphon system.

The carburetor used on this model is the Stromberg, but other carburetors are optional.

Clutch and Transmission.

The clutch is the only type that nobody "knocks," namely, a very light cast aluminum, leather faced cone, flat springs. The easy engagement due to the arrangement of the springs under the leather face and the noiseless gear shift, possible with such light rotating parts, is a great relief to any operator or passenger accustomed to the experimental clutches found in many makes of otherwise fine cars. The Spoerer people have used this construction from the beginning, five years ago. The clutch can be taken out by only loosening five nuts.

A double universal joint is mounted between clutch and transmission in a dust-proof housing.

Rear view of Spoerer stripped chassis, showing position of motor and differential housing

Model 40-C Spoerer cars. This model is made in six pleasure car bodies and a delivery wagon body Prices range from $2950 to $4150.

The transmission is of a selective type, three speeds forward and one reverse with positive interlocking device fitted inside the gear case. All shafts are made of nickel steel and run on F. & S. ball bearings.

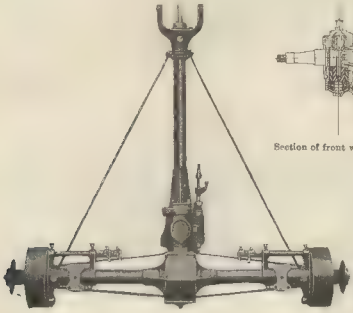
The gears are made of Krupp chrome nickel steel. The teeth on these gears are ¾ in. pitch with 1 in. face. The direct drive is accomplished by bringing an external and internal gear in mesh. By using this construction more metal is in action than when a jaw clutch is used. Universal joints of the Spicer type are used, and the driving shaft is made of nickel steel. Two universal joints are used between transmission and rear axle.

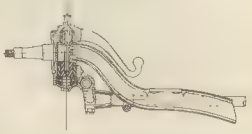
Axles, Brakes and Wheels.

The front and rear axles are of the Timken make. Timken roller bearings are used throughout.

The emergency and service brakes are attached to the rear wheels. The emergency brake is an internal expanding member, 2 in. wide and 13½ in. in diameter. The service brake is a contracting band 14 in. in diameter and 2 in. wide.

36 in. wheels are fitted with quick detachable standard universal rims and only the best grade of hickory is used for the spokes which are 1⅞ in. thick.





Section of front wheel bearing and dropped front axle.

Steering and Control.

The screw and nut type Gemmer gear is used and the spark and throttle levers are on top of the 18 in. steering wheel.

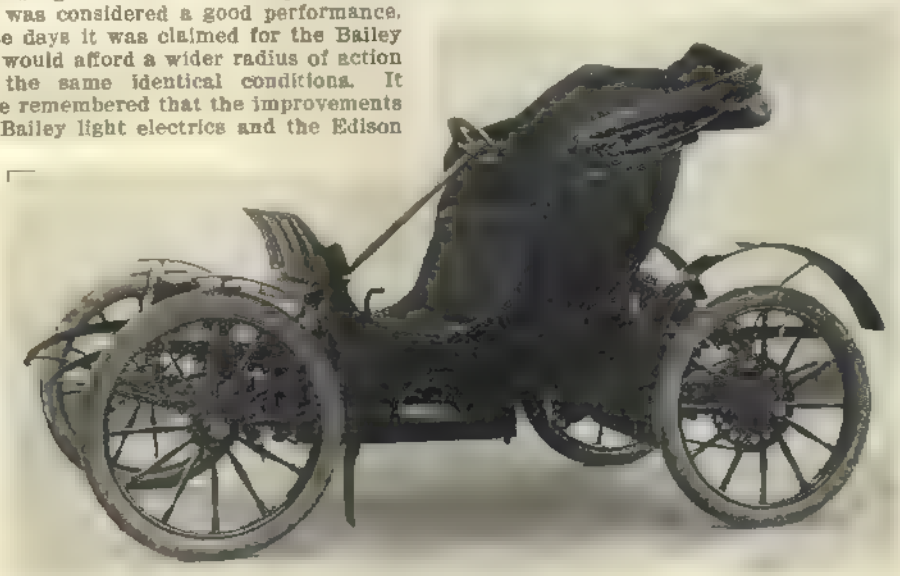
Frame and Springs.

The frame is of best grade heat treated alloy steel, and springs are semi-elliptic front, three-quarter scroll rear.

The Bailey Light Electric Victoria Phaeton

By C. E. Morris

The Bailey light electric victoria phaeton, the product of S. R. Bailey & Company, of Amesbury, Mass., a concern which years ago attained a reputation for high-class horsed vehicles, offers in the 1911 model no radical departures from the 1910 machine. It follows the same general design which has rendered the Bailey a distinct type of car and for this season, as last, is built to use the Edison type battery. The Bailey has come to be known as the "high mileage electric," and there is a reason for this. It is within the memory of all that only a few years ago 75 miles on a single battery charge was considered a good performance. In those days it was claimed for the Bailey that it would afford a wider radius of action under the same identical conditions. It must be remembered that the improvements in the Bailey light electrics and the Edison type battery have kept apace, for, in a sense one is built for the other. S. R. Bailey & Company assert that the Bailey electric victoria phaeton is the lightest car of its type built in this country. During the past year some wonderful performances have been made with the car as will be noted further on, this text. For 1911 the Bailey light electric is a "snappy" type of car and of the sort that is in demand among the more discriminating buyers. One improvement that adds tone to the car is the continuation of the fenders in Model B, there being no break at the step as in last year's Model A car.



Bailey Victoria Phaeton.

Fig 1 A feature of this machine is the low hung pressed steel frame dropped at the center Edison battery is used.

Channel Steel Frame

The Bailey light electric is equipped with a steel frame, the side members of the frame being of channel steel dipped at the center, the effect being to secure a low center of gravity which bestows upon this vehicle a certain sense of roominess and comfort. This steel chassis permits of a long wheel base which in turn makes for easy riding and the body of the car is disposed between the axles which also effects ease of riding and steering

Motor.

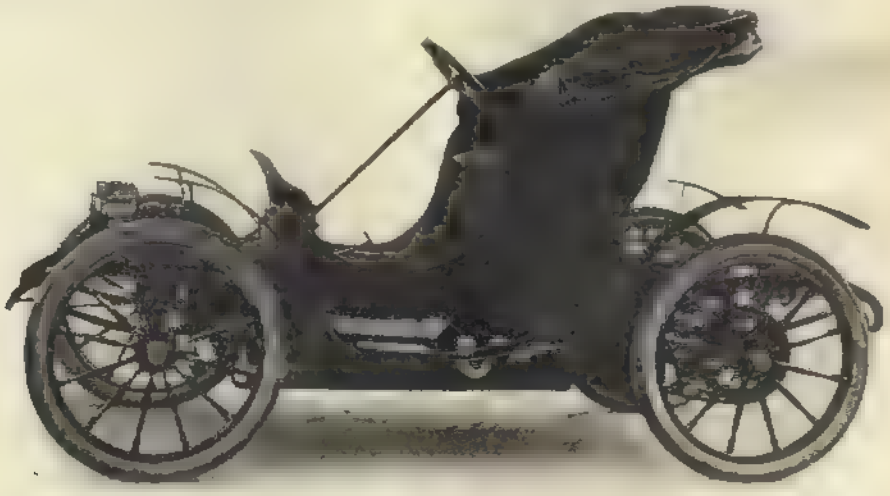
The Bailey light electric Victoria phaeton motor is of a special design, 60 or 48 volts, and of high efficiency, and light weight is not sacrificed to durability. The motor is carried low and well to the rear so that the entire space under the single seat is available for stowage. Drive is through a Morse silent chain to the counter-shaft and by double reduction side roller chains to the rear wheels, the sprockets being of large diameter. The Bailey company give as a reason for the use of the double side chain drive in these days of almost universal use of the shaft form of drive in pleasure cars, that it is more economical than the bevel gears necessary to shaft form of propulsion. The motor is suspended from the vehicle frame at three points between the cross members of the frame and is so placed as to evenly distribute the weight The forward sprockets on the counter-shaft are housed.

The axles used on the Bailey are of the so-called "Bailey pivot type," which, in the opinion of the builders is the most nearly perfect axle bearing ever evolved. The wheels, it is said, need never be removed for adjustment and will run for six months with one oiling.

The wheels are of the so-called chariot type of improved design, being stronger in the hubs than those previously used and by reason of the absence of the wood rims are lighter than would ordinarily be the case. They are easily repaired when such is necessary. The spokes, twelve in number in front and rear wheels, are of swelled center order and rather add to the dignity of the car which stamps it as a vehicle of the best class of the private service sort.

The wheel base is 82 inches and the tread 54 inches.

vibration. This Edison battery has long been a feature of the Bailey electric, in fact, the car was originally designed to take the Edison battery, and it is claimed that in actual service of a year or more new batteries have not only maintained capacity, but have increased 15 to 25 per cent. Under such conditions it is obvious that a high mileage is possible. The battery is suspended at three points, hung low. The following Edison type batteries are fitted to Bailey light electric vehicles: 40 cells, A-4 type, which is good for from 75 to 100 miles on a single charge, the car so



Bailey Electric Model B.

Fig 2. This car weighs but 8?? pounds without battery. The wheel base is long for electric and the continuous guards give a pleasing outline. Steering is by wheel following gasoline car practice

Edison Battery.

The battery of the Bailey light electric is of the Edison type, which may be varied. The Edison type battery is too well known to require a lengthy description and as involved in the Bailey it represents what is considered the best for pleasure vehicle use. It is compact and light and is said to be only one-half the weight of any other commercial battery for the same watt-hour output. It is guaranteed for three years and cannot sulphate, and it is claimed that the vehicle may stand for any length of time either partially or fully discharged without any harm resulting, and it is also claimed for the Edison type battery that it may be fully charged and stand for some time and still show nearly 100 per cent. of the original charge. It can be charged and discharged at high rates without harm which means much to the private owner who does his own recharging. There being no acid in either liquid or gaseous state there is no deleterious effect on the wood fittings and there is no disintegration of active material at any stage of the life of the battery. It will also withstand much

equipped selling at $2350; 44 cells, A-4 type, which will make faster time and do more efficient hill work, and priced at $2400. An extra set of four cells may be added to this equipment when desired. The high mileage set is of 54 cells, A-4 type, the car with this equipment being good for 150 miles on a single battery charge, the price of the vehicle thus fitted being $2600. Forty cells, A-6 type, will make for increased mileage at a slower speed, the car so equipped selling at $2600. The only expense with these batteries is the replacement of the electrolyte once a year which costs about $13.

The makers state that the cost of operation is less than the upkeep of a horse and carriage. At six cents per kilowatt hour the cost of operation of a Bailey electric victoria phaeton is about one cent a mile.

Control.

With the weight evenly distributed and carried low with the body well between the front and rear axles, and with long easy springs, it follows that the Bailey is an easy car to control. The 1911 models are wheel steered just as are gas cars. The

steering is from the left side, which makes the car desirable for town and suburban service where traffic regulations require that a vehicle approach the curb on the right.

The speed control lever is mounted on top of the steering wheel which is secured to an inclined post, this lever working in about the same manner that the spark and throttle levers are operated on a gas car. The lever can be worked by either hand, is always in sight and the speed position is always definite. This, of course, obviates the usual side hand lever which might be awkward. The controller interlocks with the brake so that should the brake be applied the circuit is opened. This obviates loss of power by attempting to start when the brakes are set.

Brakes—Springs.

There are two brakes on the rear wheels and one on the motor, and all three are operated jointly by a single foot lever. The rotation of the motor is checked as soon as the momentum of the vehicle is stopped. The brake bands are worked through adjustable pull bars. Springs, front and rear, are of conventional semi-elliptic pattern.

Body.

The body of the Bailey Victoria phaeton is of the so-called queen type, is made of bent and laminated wood, three ply, the panels also being laminated. The body weighs but 30 pounds and can be subjected to severe twisting strains without danger. It is claimed that it is stronger than the usual wood body. There is a graceful curve to the body which brings out the victoria effect. The dash is of leather, being curved outward.

The hood or top is of the full Victoria type and is made of the best of materials. Finish is in Bedford cord dark green, maroon or blue broadcloth. Other colors are optional. The width of the body on the floor is 39 inches, the width of the seat cushion is 46 inches so that three persons could occupy the single seat, the width of the bows is 52 inches, front of cushion to dash 27 inches, step from ground 17 inches, floor from the ground 26 inches, and from the cushion to the middle bow of the top 43 inches.

The weight of the car varies from 1750 to 2000 pounds, according to the battery equipment. The weight of the vehicle alone minus the motor, battery and countershaft is but 825 pounds.

The equipment includes odometer, horn, voltammeter, lamps, two front and two rear finished in black, full set of tools, and a boot or water-proof apron in a permanent wallet on the dash. The Model A car is finished with divided fenders, the Model B with the continuous fenders, both cars otherwise being the same.

Bailey Performances.

As above stated, there have been many demonstrations of high mileage in Bailey electrics during the past year, an illustration being a trip of 1000 miles over the Ideal Tour route and a climb of seven of the eight miles up Mt. Washington, the car used on this occasion having been a 1909 model which had been driven 11,000 miles before Thomas A. Edison decided to test out his battery fitted to this car. The car with a crew of two men with baggage and touring equipment weighing 300 pounds, left New York September 17th last, and followed the inland route via Briarcliff, stopping for the night at Waterbury, Conn. The close of the next day the car was at Pittsfield, Mass., the third night at Manchester, N. H., where Peru Mountain had to be negotiated, which was successfully accomplished. The car then continued to Claremont, N. H., with a stop for the night at Plymouth, then to Mount Washington Hotel and Bretton Woods. At Bretton Woods it was decided to attempt the climb to the clouds, the car being recharged at Jackson, the nearest station and was towed to the base of the climb at the "Glen." On account of heavy weather the car stopped at the "Half way house" until the next day, the climb being continued the next morning. The vehicle climbed seven of the eight miles of mountain, which was regarded as a wonderful performance. The motor was of 2½ h. p. and the load over a ton. The car, after the climb, was driven to Poland Springs, Portland, Portsmouth, Amesbury, where it was made, to Boston, then to Worcester, Springfield, Hartford, New Haven, Bridgeport and back to New York. The trip was a hard one for both battery equipment and car and proved the worth of both. Various other test trips were made with the Bailey electric fitted with the Edison type battery. All of these tests have shown that the Bailey is actually a high mileage car

FACTORY SITES

Ellwood City is one of the new manufacturing towns promoted in the Pittsburgh District within the past 15 years. It is located in the southern part of Lawrence County, Pa.

The promoters of the town (The Pittsburgh Company) have always encouraged the location of manufacturing interests, and are at the present time offering factory sites to automobile manufacturers. This company calls attention to the excellent railroad facilities enjoyed by the town, its cheap electric power, perfect sewerage system, immunity from floods, freedom from labor disturbances, abundance of native coal and natural gas, and its public improvements, all of which would seem to make it a desirable manufacturing location.

Oliver Motor Trucks

The Oliver Motor Car Company, of Detroit, Mich., has added to its line of cars a 1½-ton truck of which we show two views. The power plant is the same as that used on their 1300 lb. delivery wagon, the same being described by us in the issue of February, 1911, p. 276. In the construction of this car the same care has been used in the selection of materials and the same rigid inspection has been followed throughout. The illustrations clearly prove that the car is designed along common sense lines and is fool proof as far as it is possible to make it so. The wheel base is 118 in., the tires are 36 x 3½ in. solid. The length of the frame over all is 172 in. and the distance from dash board to the rear of seat is 43 in., leaving a clear load-carrying length of 89 in.

An innovation in the Oliver line is made by using jack shaft with chain drive to rear wheels instead of the straight shaft drive which was formerly used. The front springs are semi-elliptic 38 in. long, 2¼ in. wide and are composed of eight leaves. The rear springs are also semi-elliptic, are 44 in. long 2½ in. wide and have eleven leaves. The front axle is an I-beam section

Fig 1 Oliver 1½ Ton Truck used by a brewery for delivering beer. This is a typical stake body with a roof added for the protection of the load and the driver. The motor is of the two-cylinder opposed type 5 x 5 in. and is mounted on the front end of the chassis under the hood.

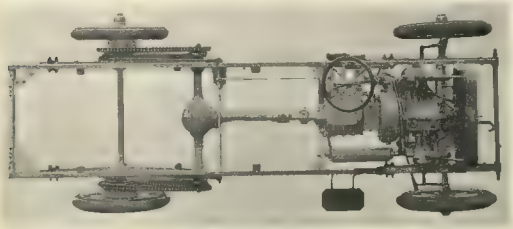


Fig. 2. Top view of Oliver Unit Power Plant with part sections of some of the elements. Note the wide radiator filling cap and accessibility of all parts

drop forging with 2½ in. spindles. The rear axle is a 2 x 3 in. drop forging. Timken roller bearings are used throughout.

Bodies of any design are furnished. The cut shown herewith is an Oliver truck operated by the Tivoli Brewing Company, of Detroit, Mich

THE MURRAY TRUCK.

The Murray three and five-ton truck takes its place in the ranks of the motor truck industry after six years of careful study in the needs and requirements of a commercial vehicle. It is designed along conventional lines and the general contour, as can be seen from the photograph, is much the same as the Saurer. The motor of the four-cylinder, four-cycle type is placed for-

The "Murray" Truck.

ward under the hood, and develops between 50 and 55 h. p. at 1000 r. p. m. The clutch, of the multiple disc type, is housed in an oil-tight case in the flywheel, and it is possible to start the truck on high gear when fully loaded, without jar or tremor. The transmission and jackshafts are housed in a single casting, making the whole unit very light and compact, and the interior design of the transmission is unique, inasmuch as a direct drive is obtained on both second and third speeds, two sets of master bevels being used to make this possible. First and reverse are obtained through a single spur gear to the counter shaft. The final transmission of the power to the rear wheels is through double side chains, covered with dust proof cases, which greatly lengthens the life of both chains and sprockets. The axles are drop forgings, the rear being of solid section, while the front is of the I beam type. All wheels run on large ball bearings, those in front being of the cup and cone type to take the thrust in turning. The steering gear is fitted wih a brake arrangement, which absolutely prevents lost motion, no matter how long the truck is run, and in handling the truck fully loaded it steers as easy as the lighter pleasure cars The controls are conveniently located, the spark and throttle being on top of the steering column, while the clutch and service brake pedals are placed one each side of the steering post with the selective gear shift lever and emergency brake on the right hand side. The one feature of a commercial vehicle which is all important is accessibility, and in this respect the Murray truck claims to have features possessed by few trucks on the market, it being possible to dissemble the clutch and complete driving mechanism and replace it in ten minutes, while it is but the work of seconds to take off the radiator or steering gear. The manufacturers are in a position to build special bodies to meet the needs of an individual purchaser at short notice, and at moderate prices. These trucks are built by C. L. Barker, of Norwalk, Conn.

SUCCESS OF ELECTRIC STREET WASHERS

Charlottenburg, Germany, is so well satisfied with the three electric street washers which it has been using that the Magistracy has decided to purchase two more.

The current consumed last summer cost $750, much less than it would have cost to wash the same street with horse equipment. The electric machines cost $4,500 each, and the plan is to ultimately operate motor equipment exclusively. The change will be gradual.

MOTOR ENGINES IN INDIA

Calcutta, India, is among the numerous cities in the far East which has transplanted its horse-drawn fire apparatus with the up-to-date motor-driven vehicle. Here the horseless vehicle has proven its efficiency, and many other fire brigades in India are looking into the future when the horse-drawn vehicle will give way to the "howah gharry"—a vehicle driven by the wind, in other words, a motor, which, to the minds of the ignorant natives, seems to fly along without any apparent cause

MAIL CARRIER TRIES AUTO

A Dayton, O., rural mail carrier recently tried an auto in delivering mail along his route. In two hours and a quarter he delivered 650 pieces at 310 boxes along his route, bettering his time with a horse by over five hours.

Harry Bell, of Spokane, Wash., recently loaded a bungalow, weighing four and a half tons, on a truck of three-tons capacity, and hauled it 25 miles in one hour and forty minutes.

Commercial Car Number Coming!

Adams Trucks
"Deliver the Goods"

SOME "WHYS"

Scientifically Constructed by a firm which has made fine machinery for 40 years.

Four Cylinders cast en bloc.

Positive Water Circulation around cylinders and manifold.

Radiator, vertical Tube type, protected from undue strain.

Lubrication affords advantages of splash and force feed systems combined.

Crank Shaft of 3½% nickel steel, drop forged. Long bearing journals.

Spark and Throttle Control on steering wheel with two straight rods leading direct to magneto and carburetor.

Wells Expanding Disc Clutch can be dropped in suddenly at any speed without undue strain.

Transmission, selective type, three speeds forward, one reverse; direct drive on high speed.

The Driver's Seat is on the left side, where he can enter the car from the sidewalk and can guard against accidents.

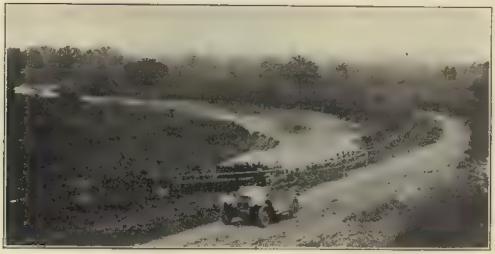
Carrying Capacity, one ton.

These are only a few of the things which combine to make the Adams Truck a favorite. Write for details. We offer a splendid agency contract for 1912.

Adams Trucks
Deliver the Goods

The Adams Bros. Company
Findlay, Ohio

The Buffalo Run



Along the road—Costello's Maxwell.

The second annual reliability run of the Automobile Club of Buffalo, N. Y., finished September 9, was won by the Oakland 40 h. p. runabout in Class 3A. This car carried off the Laurens Enos trophy and the sweepstakes, in the hands of H. A. Bauer. It had a clean score on the road, and in brake clutch and motor tests. The final technical examination disclosed five loose rivets and bolts, a loose fan pulley and a leaky water connection, which piled up a total of 8 demerits.

The route was 855 miles long over a series of hills and three so-called "mountains." Showery weather made muddy roads, and on some hills the cars slipped back faster than they went up. Bauer drove very carefully and kept right up, or rather down, to schedule, while the others were out for speed. Only on the big hills did his speedometer hand show much excitement.

Class 1A was won by a Flanders in the hands of T. R. Bell, whose runabout got 48 points, road and technical examination penalties due to the bad roads.

Maxwell came out the winner of the 3A division for touring cars, with 51 points. This car, besides suffering as did the others at the hands of the roads and the schedule, had carburetor trouble after it started to use a higher grade of gasoline at noon of the first day. The technical examination lost the car 16 points.

The Lion got heavy penalties for a broken side member, but nevertheless won in its class, 4A. Harry Blomstrom, of the Lion factory, drove. The left rear spring developed a weakness that started all sorts of trouble, ending in the broken side member.

Jos. Yardham in his Everitt made a hard try for the trophy in his division, 2A, but, like the rest, suffered too much the first day. A leaky pump allowed the engine to heat, carburetor troubles appeared, and penalties were imposed in the brake tests.

Thomas Costello's Maxwell had carburetor troubles the first day due to the high-proof gasoline. Otherwise it would have been a probable winner.

The Ford entered in Class 1A got a total of 101 points, but due to its not carrying the full quota of passengers the first day was barred from the prize.

The Ford in the runabout class also finished.

The only other car to finish was the Warren-Detroit, which, after coming through with a perfect road score, lost 79 points in the technical examination, due to a broken spring clip and horn, and brakes that refused to hold.

The other cars were mostly eliminated by accidents. C. F. Munroe, who last year won the Enos trophy, had one of his Maxwell Specials and was leading until near the noon control, when a collision with an Abbott-Detroit non-contestant put both cars out

Oakland, the winner, going through the brake test.

TABULAR STORY OF THE RUN.

No.	Car and Driver.	1st Day, Road	1st Day, Tech.	2nd Day, Road	2nd Day, Tech.	3rd Day, Road	3rd Day, Tech.	4th Day, Road	4th Day, Tech.	Road Tests Total	Brake	Clutch	Motor	Total	Tech Ex.	Penalties	Grand Total
	Class 1A Runabouts—$800 or Under.																
4	Flanders—T. R. Bell	0	8	0	0	0	0	23	6	33	0	5	0	5	11		48
21	Ford—G. Morton Wolfe	0	0	0	0	0	5	0	43	48	5	0	5	10	15		73
2	Flanders—B. W. Scott	0	8	0	0	0	0	Skidded and withdr., disabled									1003
9	Flanders—G. M. Herron	0	0	0	4	0	0	Skidded and withdr., disabled									1004
	Class 1A Touring Cars—$800 and Under.																
14	Ford—Wilkinson and Kimlets	0	19	0	3	0	11	0	19	52	19	0	0	19	36		107
	Class 2A Runabouts—$801 to $1200.																
27	Paige-Detroit—J. E. McFadden	634	314	0	291	0	4	Withdrawn									2243
	Class 3A Runabouts—$1201 to $1600																
24	Oakland Howard A. Bauer	0	0	0	0	0	0	0	0	0	0	0	0	0	8		8
26	Warren-Detroit—J. D. Mohrhardt	0	6	0	1	0	0	0	0	7	41	0	0	41	31		79
	Class 3A Touring Cars—$1201 to $1600.																
2	Maxwell—E. G. Gager	6	12	0	14	0	0	0	3	35	5	0	-0	5	11		51
8	Everitt—J. W. Gardham	0	27	0	4	0	23	0	5	59	15	0	0	15	12		86
10	Maxwell—Thomas Costello	0	46	0	58	0	2	0	0	106	5	0	0	5	6		117
11	Schacht—E. W. & C. H. Werick	Hit wagon, damaging axle, withdrawn															1000
1	Maxwell—C. F. Monroe	Disabled on account of collision, withdrawn															1000
	Class 4A Touring Cars—$1601 to $2000.																
6	Lion—H. L. Blomstrom	0	11	0	8	0	20	47	27	113	0	0	5	5	508		626
	Class 5A Touring Cars—$2001 to $3000.																
12	Ohio—E. A. Blaney	0	98	0	3	0	14	Withdrawn									1113

of the running. Munroe managed to make repairs and was limping in to the control when the Schacht ran into a hay wagon, bounded back again on the unlucky Maxwell and put it permanently out.

The details as to the cause of the technical penalties reveal that the cars certainly went through more than an ordinary tour. Just look at what follows:

2 Maxwell
- Lamp bracket broken 5
- Broken magneto terminal 2
- Leaky gas connection 1
- Lamp bracket loose 2
- 1 rivet loose 1
- Foot brake ..... 5 — 16

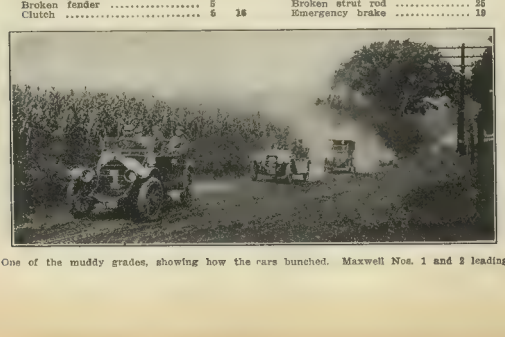
4 Flanders
- 2 lamp brackets loose 4
- 2 mud apron bolts loose 2
- Broken fender 5
- Clutch ..... 5 — 16

6 Lion
- Broken frame member 500
- Lost mud apron 8
- Cylinder missing .... 5 — 513

8 Everitt
- Lamp bracket loose 2
- Broken fender 6
- 2 pan bolts lost 4
- 1 pan bolt loose 1
- Emergency brake ..... 15 — 27

10 Maxwell
- Leaky radiator 1
- Leaky gasoline line 1
- 2 loose rivets in cross member .. 2
- Loose shock absorber 2
- Foot brake ..... 5 — 11

14 Ford
- Loose muffler 2
- 8 nuts loose 3
- Loose nut on strut rod 1
- Broken strut rod 35
- Emergency brake ..... 10 — 55



One of the muddy grades, showing how the cars bunched. Maxwell Nos. 1 and 2 leading.

21	Ford		
	14 rivets loose in motor support..	14	
	1 rivet loose on cross member..	1	
	Emergency brake	5	
	Motor missing	5	35
24	Oakland		
	Leaky water connection	1	
	2 mud apron bolts loose	2	
	2 mud apron rivets loose	2	
	1 rivet in cross member loose	1	
	Loose fan pulley	2	8
26	Warren-Detroit		
	Loose spring horn	15	
	Spring clip broken	15	
	Muffler wire broken	1	
	Foot brake	3	
	Emergency brake	39	73

CINCINNATI HAS A RACE

Cincinnati, O., had its first auto race September 10th, as a climax to a week's celebration following the opening of the Fern Bank Dam across the Ohio River. The course ran through Silverton, Blue Ash and Montgomery, about 15 miles outside of the city. It is a triangular one 7.9 miles long with one sharp turn, and the surface was not especially good.

Two races were run at once, one for 150 miles, the other for 200 miles. The position of the cars at the end of the 19th lap determined the winners of the shorter race. Jenkins, in a Cole, made the distance first, in 166.29, followed by Thatcher in Ohio, in 171.19; Gilchrist, in Cino, 180.29, and Matthews in Ohio, 182.22. Hearne in the Fiat crossed the line 7 minutes ahead of Jenkins, and Knight in Westcott came in a few seconds ahead of Matthews, but neither of these cars were in the class for which the small race was won, so were not eligible.

The larger race was for non-stock cars under 600 in., and was captured by Hearne in Fiat, in 209:03.20. Jenkins, after winning the 150-mile event, kept on and did the 200-mile for second place, in 220:04.27. Knight, in the Westcott, came third, 233:38.75. Gilchrist and Matthews, after taking third and fourth place in the 150-mile event, kept on and captured fifth and fourth places, respectively, in the 200-mile. Thatcher had clutch trouble and withdrew after finishing second in the 150-mile.

The only entry which did not start was the Abbott-Detroit, and F. E. Edwards, the A. A. A. Technical Executive, refused to allow this to start because the seating arrangement had been changed so that the mechanic was immediately behind the driver.

The first lap brought disaster to three cars. The Stutz had trouble starting, and after covering some 20 feet in 15 minutes, was withdrawn. Rainey's Cino threw a tire near Blue Ash, and turned over. Rainey got a sprained wrist.

Burke, in his Cino, led in the short race up to the fifth lap, when a broken connecting rod put him out.

Jeffkins, in the Schacht, was wrecked in its 80th mile. This was the last accident. A tire blew out in a soft patch and the wheel broke. The resulting smash wrecked the car, without injuring either driver or mechanic very seriously.

Hearne, in his big Fiat, took the lead from the first and was not pushed very hard at any time.

There were only two points about the race which could have been improved upon. One was the condition of the course, and the other its policing. The road was very soft in spots, even muddy, preventing very fast work, and the Ohio militia were neither numerous nor energetic enough to keep the crowds as clear as safety demanded.

A feature of the race was the lack of stops at the pits. During the entire four hours only five cars stopped for repairs or fuel, and only two tires were changed.

ENTRIES IN FAIRMOUNT PARK RACE

Up to date of going to press a number of entries had been received by the Quaker City Motor Club for the annual Fairmount Park race on October 7, and the list of cars and drivers indicates that the race will as usual be a thrilling contest between nationally known cars driven by famous drivers.

Len Zengel will be on hand in a National, with his team mate, Don Herr, in another car of the same make. These two were entered by C. C. Brownlee, of the Tioga Automobile Company, Philadelphia agents for the National.

Lee Oldfield (no relation to Barney) will drive a 90 h. p. Fiat, entered by F. S. Hodson, a private owner, member of the Q. C. M. C. It is said that two other members of the club will enter their own cars and that one will do his own driving. Names, however, are not at present available.

The Ideal Motor Car Company has entered a Stutz, which will be driven by Gil Anderson. The J. I. Case Company has entered a Case car, driver Joe Jagersberger, and the Lozier people have given Ralph Mulford a chance in entering one of their cars.

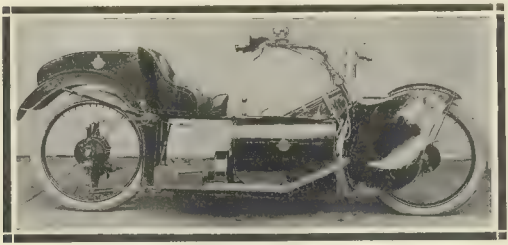
The race is classified under Class C, nonstock, and the prizes amount to $6,500, of which $2,500 goes to the car making the best time for the 200 miles. The remaining $4,000 is distributed to winners of the various divisions, as follows:

Division.	Displacement.	Prize.
3C	231-300	$1,000
4C	301-450	1,000
5C	451-600	1,000
6C	601-750	1,000

The Bosch Magneto Company has offered prizes as follows: In each of Divisions 3 c, 4 c and 5 c, first prize, $100; second and third, $50, in Division 6 c, first prize, $200; second, $75; third, $50. These prizes are, of course, conditional upon the drivers using the Bosch Magneto.

The "Wilkinson" Touring Autocycle

The machine shown is manufactured by the Wilkinson Touring Autocycle Company, of London, England, and although designed primarily for touring purposes, nevertheless it will show a fair turn of speed on the high gears. The machine will carry 200 lbs. anywhere, provided the roads are not rough, but it will be plainly seen that the machine is manifestly not a rough riding machine as the clearance on the muffler side is about 4 in. unloaded, and the loaded clearance, without taking into account the swing of the body in motion, is about an inch less. You will see that the muffler is carried under the left-hand footboard and while this position may be all right for English roads it cuts down the clearance too much for a give-and-take country road here.



The "Wilkinson" Touring Autocycle—In Road Trim.

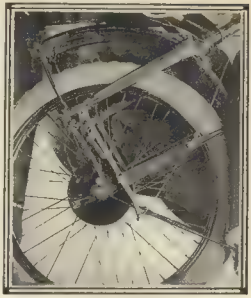
The wheel base of the machine is 68¾ in. and the wheels are 26 in., wheels using 2½-in. tires. The rear wheel, as will be noted from the photograph, has its tire lug fastened directly opposite the valve stem Referring to the "In Road Trim" photograph, it will be noticed that the engine is very thoroughly guarded, that the front wheel is practically hidden and that the back wheel is protected by a very wide guard extending back so far that the rider runs practically no chance of being spattered from the rear. Underneath the engine are two detachable guards or oil pans which serve to protect the engine from mud and at the same time assist in keeping oil droppings from the pavement. The clutch is covered by a flat band and the universal joints are protected by boots which practically cover all the parts liable to damage from mud.

The other photograph shows the engine guards taken off and the machine tipped slightly away in order to show the underbody as well as allow the distinguishing of the various control levers. It will be noticed in this photograph between the gear box and the clutch, the edge of the flat driving shaft, which is a piece of spring steel fitting in slots in the end of the gear box and the clutch respectively, and acting in practically the same way as a universal joint, also giving a trifle of elasticity to the drive. The drive from the gear box to the worm on the back hub has considerable motion, due to the fact that the back fork, common in most machines, is here dispensed with and the wheel is supported on four flat springs only No matter what the criticism (mechanical) is of this feature it works very well in service. In some places it is far superior to the rigid fork used in this country. The control is very plainly shown in this photograph. On the left handle bar is the button magneto cut-out on top of the grip, both of which parts are hard rubber. The lever "A" is the valve lift working through a Bowden wire to a flat bar, a longitudinal motion of which lifts all four valves through straight cams of wedge shape. The lever "B" on the same side is interconnected with the foot button "E," both of which throw the clutch out of contact and against a double clutch brake of vulcanized fiber. On the right handle bar the two levers jointly marked "C" are the throttle control and auxiliary air. The lever "F" is directly interconnected to the gear box which contains sliding gears for three forward speeds, all speeds being geared. The lever as set in the photograph is neutral, the first speed being in the first notch forward, the second in the first notch behind, and the third in the extreme forward position. The lever "G" is the hand starting de-

vice which acts through a toothed quadrant and bevel gear directly onto the crank shaft, the gear being also carried on a spring tooth ratchet which allows the engine to start in any position of the lever. When not in use and thrown forward the quadrant and bevel pinion do not engage. On the opposite footboard corresponding in position to the clutch button "E" is the foot button for the back brake, this being a band brake of generous proportions carried in a casting identical with the housing of the worm gear. The lever "D" on the right handle bar controls the front brake of practically a similar size, which is shown more clearly in another cut.

The engine itself is a four-cylinder engine (bore 2.45 in. and stroke 2.45 in.), being somewhat similar in layout to the engine put out by the Fabrique Nationale on the F. N. motorcycle, which was the first four-cylinder motorcycle of which much was known in this country. The only peculiar feature about this engine is the attachment of the intake manifold which is held in place by three C clamps adjusted by thumb nuts on the upper side and thus very readily removed if access is required to the valves. The magneto is a Bosch regular and gear driven. In the angle of the frame forward is the cylinder oil tank, the oil being carried under pressure and fed through the hand pump on the right hand side. Directly behind the seat is a glass sight tube to show the gasoline in the tank.

Regarding the riding qualities of this machine it is said that they are not equaled in any two-wheeled vehicle at present in use, and they more nearly approach the riding of a full sprung touring car than anything else. On account of the slant of the front head the steering is very delicate, and owing to the number of controls bunched at the grips it is not a machine for a green-horn to take out upon the road and do things with. Outside of this drawback the machine is mechanically very complete and shows that much study has been put into it. On top speed it is claimed to readily do 45 on the level and probably much more if the road is good enough to allow everything to be opened wide. It climbs hills readily on either speed and on the first speed will take grades of one in four to one in eight



Front Wheel Brake.

On the "Wilkinson" touring autocycle the front wheel is fitted with a brake operated by control lever "D" on the right handle bar. The spring suspension of the wheel and cam control of the brake are also readily seen.

The "Wilkinson" Touring Autocycle.

This view shows the machine with engine guards removed. The machine is slightly tipped in the photo so as to show the underbody as well as to bring up the various control levers. Wheel base is 68¾ in. 26 in. wheels using 2½ in. tires. For further details see text

in deep sand without trouble. It is so low that there is absolutely no slip and it can be driven over very greasy pavements without fear. The low position of the rider makes it possible to put the feet upon the ground without straightening the leg, and this gives a good heel hold if necessary.

WON PERFECT SCORE IN ENDURANCE RUN

One of the most meritorious performances in the recent twelve-hour endurance run promoted by the New Jersey Motorcycle Club was that registered by D. A. Nielson, of Plainfield, N. J., who finished the long grind without making a single mechanical adjustment and who was awarded a perfect score by the official conducting the contest. What makes Nielson's performance the more meritorious is the fact that he had just finished a 600-mile tour over poor roads and entered his 5 h. p. Emblem in the run without having made any adjustments whatsoever; his was the only Emblem motorcycle in the contest.

IOWA MOTORCYCLE RACES

Motorcycle races on the Marion track, at Cedar Rapids, Ia., on Labor Day produced one of the largest crowds that was seen at the track. There were no serious accidents with the exception of two spills in two of the professional events. Eight events were run off in all. Ray Parks, on an Indian, won four events, the three mile private owners, three mile novelty, seven mile amateur and the Australian pursuit race. Ed. Meisel, Excelsior, won the five mile and ten mile professional. The five mile professional went to Paul Clarkson, R-S White. Leonard Swett, Excelsior, captured the twelve mile professional.

HENDEE CLAIMS BEST RECORD FROM CLEVELAND TO NEW YORK

In our September issue we published a statement to the effect that E. J. Hawkins and Edw. Reschel, riding Thor motorcycles, broke the record from Cleveland to New York, their time being thirty-five hours and forty minutes. The Hendee Manufacturing Company, however, informs us that in August, 1909, B. A. Swenson, of Providence, rode from New York to Cleveland in twenty-four and one-half hours, on an Indian machine.

EVANSTON JOINS F. A. M.

The Evanston, Ill., M. C. has become affiliated with the F. A. M. It has thirty-four members on its list and is growing rapidly. Runs will be held every Sunday and races will be pulled off toward the end of the season.

The New Orleans Police Department recently installed four single cylinder Racycles for the purpose of catching speeding motorcar drivers.

NEWARK FIRM TO GIVE OUTING

Bush and McDougall, Newark, N. J., agents for the Excelsior and Thor, are making extensive arrangements for an outing of the riders of the machines that they handle. The tour will be to some of the summer resorts of the mosquito state. A baseball game between selected nines, foot races and jumping events will be some of the happenings. The firm expects to make this event annual.

The Corbin Screw Corporation, of New Britain, Conn., is starting an extensive advertising campaign for the 1911-12 season and will distribute a large number of booklets, transparencies, circulars, hangers and catalogs. No change will be made in models of Corbin brakes as the present design has been found entirely satisfactory.

The Yale Cycle & Supply Company, of Cleveland, O., has been incorporated with a capital of $10,000 to manufacture, sell and repair motorcycles, bicycles and motor cars, also to manufacture and handle accessories for motor cars. C. H. Ferguson, Mrs. Laura Ferguson, Edward E. Tompkins, H. S. Jackson and H. E. Tiggie are the incorporators.

The Pierce Cycle Company, which has been in the hands of a receiver will soon be again in the hands of its stockholders. On September 1st the receivers issued a statement of the affairs of the company showing that a profit of $17,000 was made the past year. The receivers recommended that the company continue to be administered by themselves for another year.

Ft. Worth, Tex., City Commissioners recently passed an ordinance requiring motorcycles to be registered, for which, however, there is no charge. The State law requires the motorcycle to be registered with the county clerk, for which a fee of 50 cents is charged. It is the practice to register the city number with the county clerk, making it necessary to carry only the city number on the machine.

The F. A. M. gained 1,257 members during the months of July and August—about double the number that joined during the corresponding months of 1910.

C. M. Burns, Indian agent at 1212 Fourth Ave., Beaver Falls, Pa., is organizing an F. A. M. club in his city

The Columbus Citizens' Telephone Company has purchased three Thor 4s for use of its trouble men.

Fred Biringer and B. H. Vornholt, of Leavenworth, Kan., have opened a package delivery service and are using Excelsior machines.

Were Your Lawn Mower Sales Satisfactory Last Year?

The Coldwell Lawn Mower Company's Proposed New Plant, containing over 154,000 sq. ft. of Floor Space

Did the make you handled stay sold? Did it please your customers? Were the profits satisfactory?

These are important questions for you to decide before you settle upon the line to handle this season.

COLDWELL LAWN MOWERS

Hand Horse Motor

have been on the market continuously for over 40 years.

Starting with an output of 750 Coldwells **per year** with a small shop—their sales have increased to an output of over 750 **per day**—and the plant to over 154,000 square feet of floor space with complete railroad accommodations and a dock property over 1,000 feet long.

Coldwell Lawn Mower Company

Philadelphia Newburgh, N. Y. Chicago

The Double Rub-board and Reversible Wringer Attachment

ALONE WILL SELL THIS WASHER

All hand operated washing machines require practically as much labor as does the old style board and tub method.

Just a different kind of labor, that's all.

The Dietz Electric Washing Machine

requires absolutely **NO** labor. Connect it with any lamp socket, turn on the electricity and it gets right to work.

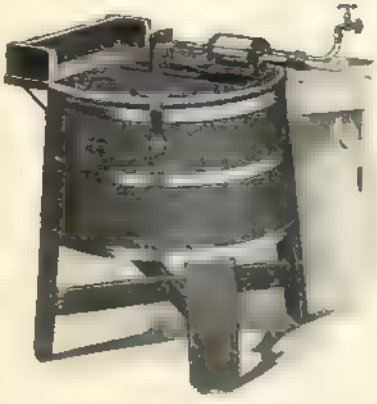
No fussing—no bother—always ready.

Has extra large capacity—will do the washing for the largest family—lasts a lifetime. Runs smoothly and easily and any woman can see its advantages over all others. Has neither exposed gears or chains, and is absolutely safe and sanitary.

Write for descriptive catalog of our Electric and Water Motor Machines.

The John Dietz Mfg. Co.

8th and Elm Sts. CINCINNATI, OHIO



The Irwin Springless

The Motor with all weak features eliminated

IRWIN SPRINGLESS Motor Washers are great sellers because they give no trouble. No Springs to break—no valve trouble—nothing inside the cylinder to ever get out of order. Just feed it the ordinary 30 lbs. water pressure, and it will run forever. The motor is made entirely of brass—has Wood Dasher that don't tear the clothes.

It's a machine that women want and ought to have.

A Positive Profit Maker—no "after trouble" for Dealer.

Retails for a popular price—motor guaranteed two years. Write for particulars.

H. R. IRWIN MFG. CO.

232 E. FIFTH STREET CINCINNATI, O.

SHOW DEXTER

To your customer, and, no matter how many other washers you have on the floor, the **Dexter Washer** will be the customer's choice.

It's the only machine with gearing under the machine and fly wheel arranged for electric, gasoline or water power.

You'll make a mistake if you don't read the details.

Dexter Manufacturing Co. DEXTER IOWA

Its Firm Grip on Rope or Wire Lines Never Fails. PUTNAM SPRING CLOTHES PIN

For sale everywhere in ¼ gross and gross cartons. Made by

C. C. PUTNAM & SON - Putnamville, Vt., U. S. A.

Our name on every carton

"HOLD FAST" CLOTHES PIN

Send for prices.

Demeritt & Palmer Packing Co., Waterbury, Vt., U. S. A.

IT'S OBTAINABLE

MR. DEALER

A machine constructed on the right and proven lines, combining all the essentials of a first-class machine, is what your trade wants and is looking for every day.

A Sample "KLIPPER" well displayed will instantly draw attention, and to see and try it is to buy it.

Runs like a watch.

Ball Bearings where needed.

Universal four stroke lever.

Lid lifts easy.

No breakage, no come-backs—just plain satisfaction all around. The question remains, how many do you want?

Ask your jobber or write us

H. F. BRAMMER MFG. CO.

DAVENPORT, IOWA

Universal Power Washer

Something entirely new in

POWER WASHING MACHINES

Not the Cheapest
Only the Best

The UNIVERSAL POWER WASHER is noiseless in operation and is equipped with a mechanism which gives instantaneous and absolute control of wringer

Complete information sent on request.

VOSS BROS. MFG. CO., - Davenport, Iowa

Twenty Pounds of Water Operates

THIS Gearless Water Motor Washer—

made of brass throughout—is gearless, with simple mechanism and is strong and durable.

Full ¾ Movement. Every movement necessary to wash clothes and wash them clean.

Mounted on Virginia White Cedar Tub.

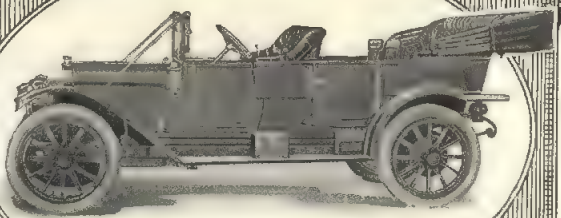
Dealers. There's a big profit in them for you.

The UNIVERSAL

UNIVERSAL MOTOR CO.

CHICAGO, ILL.

Cunningham



40 H P—$3500 complete, including imported mohair top, windshield, gas headlights, combination oil and electric side and tail lights, Prest O-lite tank, tire irons, 2 extra demountable rims, Warner speedometer, Bosch magneto, shock absorbers, robe and foot rails and complete set of tools.

THE CUNNINGHAM has demonstrated by **actual performance** to possess every good quality of the world's best automobiles in addition to which it embodies many advanced and original features in engineering design.

TO DEALERS who are looking for a future that really means "SUCCESS" we say: **"LET US SHOW YOU THE CUNNINGHAM,"** for when selling the **CUNNINGHAM** you are selling a car which offers a large measure of satisfaction which inspires for it honest praise. There are several makes of automobiles now so popular that their agency is a great asset The **CUNNINGHAM** is of this class.

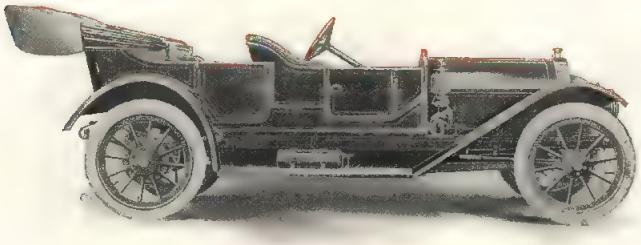
TO PROSPECTIVE BUYERS of automobiles who want a car of strength, durability, style and comfort, the **CUNNINGHAM** offers a realization of the ideal.

Let us substantiate our claims by sending you our catalogue, giving in detail the superior construction of the **CUNNINGHAM.**

James Cunningham, Son & Company

Chicago Branch:
357 WABASH AVE.

40 Canal Street, Rochester, New York



BIG SIX—MODEL 32

Six Cylinders—Model 32—4 x 5—50-60 H. P.—38-in. Wheels—
128-in. Wheel Base—Demountable Rims.

PRICE, Fully Equipped, Including Mohair Top, **$2,500**

McFARLAN SIX-1911

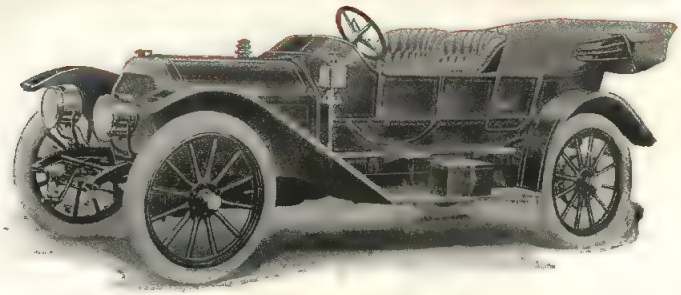
NOTE, with emphasis, that McFarlan Stock Cars, entered in America's great Motordromes—Indianapolis and Atlanta—in races ranging from 10 to 200 miles,—**have never changed a tire in a race,**—think of it. Isn't that pretty conclusive evidence of six-cylinder superiority? **Seventeen Miles to the Gallon of Gasoline.**

In all these racing events, etc., the McFarlan has made an average of 17 miles to the gallon of gasoline, another fact that explodes the one feeble argument which the exponent of the four-cylinder car can harp on for lack of something more substantial.

No Mechanical or Tire Troubles

In the newspaper reports of these great speed and endurance events the McFarlan stands out conspicuously **as the one car** to finish without mechanical or **tire troubles.**

It has been no small undertaking to develop a thoroughly high-class, high-powered, six-cylinder car that can meet the price competition of the popular four-cylinder cars, but that is precisely what we have done with the McFarlan Six.



LITTLE SIX MODEL 28

6 Cylinder—Model 28, 3½ x 4" 35-40 H. P. 32", 34", 36" x 4
Wheels—Wire. Base, 120" Q. D. Rims

PRICE, Fully Equipped with Mohair Top $2100

McFARLAN SIX-1911

When you select a four-cylinder car at $1,500, or $1,600, or over, and add to it the necessary equipment which is included in the McFarlan Six price, but **no** in the four-cylinder car price, your four has cost you practically the same amount.

And in style, in comfort, in motor efficiency, flexibility, absence of vibration, in power, hill-climbing ability and speed, there is absolutely **no comparison** which fact a demonstration to anyone of open mind will reveal in a few miles' ride.

Complete Equipment—Low Price

The McFarlan Six is the first big, luxuriously furnished six at a price within the reach of the buyers of moderate-priced cars.

And, mind you, we are **not** exploiting in this folder an undeveloped, untried car which is going to do things. We are talking of the McFarlan Six which we have spent three years in developing—a car that has earned by **performance** its right to bear a name that for four generations has stood for high quality in the consideration of road vehicles

We will mail upon request, a sheet of comparative data on motor car construction which will prove intensely interesting to any man who is interested in the motor car subject.

The McFarlan Motor Car Co.

CONNERSVILLE, INDIANA

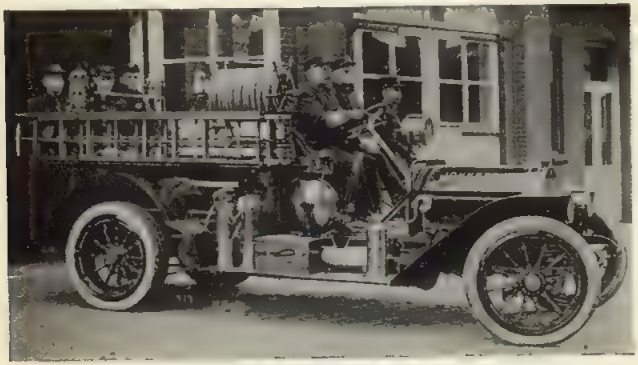
Desk I

The Automobile Combination Wagon; Its Adaptability to Fire Service; Its Efficiency and Economy

We all know that seconds at the start of the fire are worth more to us than minutes at a later time, so it is my opinion that the automobile apparatus has come to stay and that we will all purchase auto machines in the future. The auto combination will make better or quicker responses than the horse drawn in all kinds or conditions of streets or weather; this has been proven many times in all parts of the country. Prompt action is required in fire service and the auto is and is to be the means of that prompt action. Reports state that at least 75 per cent. of fires are extinguished by chemicals alone, in all probability the general use of the auto combination will increase this percentage to 85 or 90 per cent.

The auto combination will also be a great success in handling brush and grass fires, getting on the job so much quicker than horse drawn apparatus that the fire is still of no great extent and so will be handled in much shorter time and apparatus and men returned to the station ready for the next run, the auto apparatus making quick returns as well as quick responses.

Capt. A. H. Strong of Hose 7 of Springfield, Mass., in a paper read before the Massachusetts State Firemen's Association, speaking of the automobile in the Springfield department says, "This has been so successful that before many years have passed, the horse as a motive power in the Springfield Fire Department, will have ceased to exist."



The American La France Fire Engine.

Combination Chemical Engine and Hose Motor Car with Standard Equipment, Type "S." Motor 48 h. p. (A. L. A. M.), 4 cylinders, 5½-inch bore, 6-inch stroke; three speeds forward and reverse; 140-inch wheel base, force-feed and splash lubrication; 38-inch wheels; pneumatic tires, single on front, dual on rear, double side chain drive, complete chemical equipment. Built by the American La France Fire Engine Co., Elmira, N. Y. A detailed description of this apparatus will be printed in an early issue of the Journal.

The automobile combination can be used for many different purposes; as an ambulance it will be the means of saving the lives of those overcome by smoke or gases, or who have been injured in other ways, by affording quick transportation to hospital; as a fuel wagon, fuel can be furnished the engines more expeditiously, especially when the engines are at some distance from the supply base.

Comparing with the horse:—The automobile can get to the fire much quicker, is more reliable, never tires, only fed when working, less danger of accidents, being under better control of driver than horses; driver to be used as a fireman; takes less room; no stable; no attraction or breeding place for flies; less cost of maintenance.

The automobile has proved a success, why wait further development? Use what is now provided as you will get all the improvement in later purchases.

All consideration:—sanitary, monetary, those of comfort and convenience and of

*The above are extracts from papers read by Harry L. Marston, Chief of the Fire Department, Brockton, Mass., and Hugo R. Delfs, Chief of Fire Department, Lansing, Mich.

efficiency show the great desirability of the displacement of the horse by the motor-propelled vehicle.

From Hugo R. Deif's Paper.

On November 22nd, 1909, our City "Lansing, Mich.," had a call for help from the village of Bath, Mich., 10½ miles distance, we responded with our auto fire engine, taking 1500 ft. of 2½ inch hose and 5 firemen. This made a weight of 8000 lbs., we made the run over extremely bad roads (slush, ice and snow) in 28 min.; on our arrival we found 3 two-story buildings on fire. We dipped into a small swale about 700 ft. distance and in a short time we had the fire under control. Had we to depend on loading a steam engine on a railroad train, the fire would surely have wiped out the village. We made the return trip in 27 min. This to me clearly demonstrates the adaptability.

You will hear the question "Do the motors always start when an alarm comes in?" They certainly do. Lansing has to have her first failure of her motor apparatus to start, and with the exception of two accidents, has never failed to get to the scene of action. Accidents, I assure you, may happen to auto apparatus just as well as to horse-drawn apparatus, but I do maintain that accidents to auto apparatus should not be as frequent as to horse-drawn apparatus. My main reason is the perfect control one has of the auto apparatus.

I will give you a report as to the cost of maintenance since the day our city installed motor apparatus.

The Auto Fire Engine, built by the Webb Motor Fire Apparatus Co., has a sixty horse-power, six cyinder motor (Olds), equipped with a rotary pump, with a capacity of six hundred and fifty gallons per minute (plug pressure), carrying one thousand feet of hose, axes, tools, suction pipes, etc., placed in service December 12, 1908, and during the 19½ months responded to 242 fire alarms travelling three hundred and sixty-seven miles, and to 35 exhibition and test runs, travelling sixty nine miles; pumping at actual fires twenty-nine and a half hours, and at exhibitions 5 hours and 45 minutes. Cost to maintain (for gasoline, cylinder oil, grease, spark plugs, recharging storage batteries, etc.) was $77.90, or 14c. a day; and the cost inclusive of two accidents of $296.77, was 64c. a day. The tires, notwithstanding the fact they have been in service nearly twenty months, show no material wear, never had a blow out or puncture.

The auto chemical (combination) wagon, placed in service November 22, 1909, was built by the Olds Motor Works, and has a sixty horse-power, six cylinder motor, with a chemical capacity of one hundred and twenty gallons. It has responded to 141 fire alarms, travelling 226 miles, and to 7 exhibition runs, travelling 20 miles, discharging 4,542 gallons of chemical. Cost of maintenance (for 8 months) $34.17 or 14c. a day. Tires on this auto are in excellent condition—never had any trouble whatever.

The Chief's car (Oldsmobile Special) has a forty horse-power, four cylinder motor and was placed in service December 12, 1908, and during the 19½ months responded to 256 alarms, and was used for all

Test made by the Robinson Fire Apparatus Company, of St. Louis, using a Chadwick chassis, made by the Chadwick Engineering Works, Pottstown, Pa.

other business connected with the department (visiting sub-stations daily, inspectors, etc.), traveling 4,475 miles. Cost of maintenance (for gasoline, re-charging storage batteries, spark plugs, cylinder oil, tire repairs, etc.) $168.15 or 29½c. per day. Adding there three pieces for a period of 19½ months would mean a total of $576.89. To accomplish the same work using horses, you would require eight horses, which cost to maintain (for oats, hay, bedding, veterinary bills, harness repairing and shoeing) about $18.00 a month per horse, amounting in all to $2,800.00, or a saving to the city of $2,231.11 by using motor apparatus. We also save the salary of two drivers, one on the steam engine and one on the accompanying hose wagon, which would amount to approximately $2,730.00.

Our city is so well pleased with their auto apparatus that I can safely predict that we will have no horses in our departments within three years.

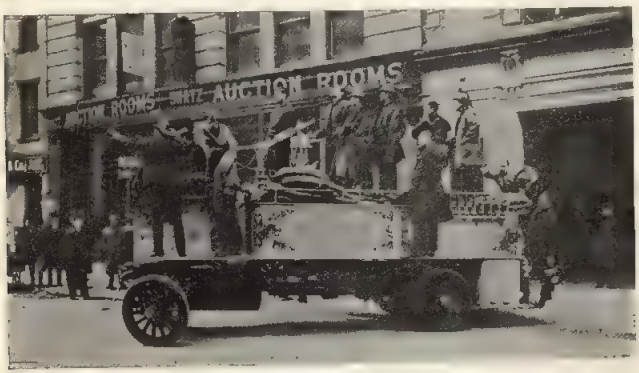
In concluding my remarks I firmly believe that auto apparatus will take the place of the horse drawn apparatus, and when it becomes universally used that the enormous fire waste in the United States will be decreased materially.

Knox Motor Driven Fire Apparatus

One of the chief features taken into consideration by the Knox Automobile Co., of Springfield, Mass., in designing their motor driven vehicles for fire service is the elimination of all construction with a trend towards touring car practice.

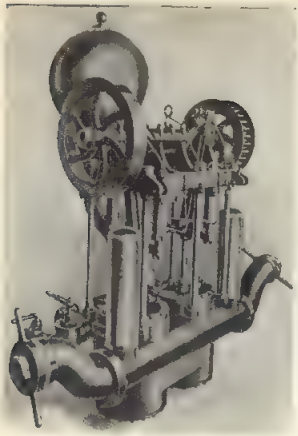
The Knox Company manufactures an extensive line of fire apparatus, including combination hose wagon, chemical and squad wagons, dispatch wagons, and fire insurance patrol. The largest machine this concern manufactures is shown by the accompanying photograph. This is what is known as their M-2 Model, and is the largest and heaviest piece of motor driven fire apparatus ever built. It has a gross weight of 7 tons, and runs at a speed of 25 miles an hour on solid tires. The apparatus illustrated is used by engine house No. 72 in E. 12th St., N. Y. City. It has been in service for 2 years, and answers on an average of 45 calls a month. A four cylinder water cooled motor, 5½ bore and stroke is used to propel this machine, and it also operates the water pump. The size of the body is 12 feet 6 inches by 5 feet 3 inches. The fire equipment furnished includes chemical tanks, 200 feet ¾ inch chemical hose and nozzle in wire baskets; two 3 gallon fireman's extinguishers; one extension ladder; one roof ladder; two fireman's lanterns; one axe; one bar; one hook; one door opener; two pony chemical holders, boxes for soda bags; acid container and small parts. The body equipment includes speedometer, clock, two oil and electric side lamps, one oil or electric tail lamp, one gas searchlight on dash, electrically ignited, one Presto-O-Lite tank, one horn or gong, etc.

This Company has recently added to its line a motor propelled pumping engine of



Knox High Pressure Hose Wagon.

This photo shows the Knox high pressure hose wagon furnished to the city of New York just leaving engine house No. 72 in East 12th Street in answer to a call. This machine has a gross weight of 7 tons, runs at 25 miles per hour on solid tires, carries 3-inch high pressure hose, and a crew of 15 to 20 men.



Knox Water Pump.

Knox high pressure water pump, used on the Knox High Pressure Hose Wagon which has a capacity of 600 gallons.

600 gallons capacity. The pump itself is shown herewith. The motor power is furnished by a 6 cylinder, 60 h. p. motor, which also drives the chassis at 30 miles per hour on solid rubber tires. This vehicle also carries a hose and chemical body, together with ladders, and if so specified can be made a complete fire department on four wheels.

COMMERCIAL VEHICLE NOTES.

Electric motor cabs are being operated in Portland, Ore. They carry seven passengers and are heated by electricity.

Mail in Cleveland, O., is collected by motors. The bodies of the machines are equipped with side racks from which hang sacks, into which the collected mail is dumped and sorted en route.

A motor truck service has been established between Ft. Snelling, St. Paul and Minneapolis. The service started with one 3-ton truck, and another is to be placed in commission shortly.

Baltimore has recommended the expenditure of $16,000 in 1911, for motor fire apparatus.

The record of a motor fire engine in St. Louis, Mo., is as follows: First month, $13.43; second month, $13; September, smaller territory covered, $3.04. These figures include, of course, only the cost of supplies and repairs.

London motor cab experts declare that profits on the operation of less than 200 machines are impossible. Evidently London conditions are unusual.

Boston fire department stations have a daily automobile drill.

A 16-passenger motor 'bus has taken the place of the old stage between Clatskanie and Clatskanie Junction, Oregon.

A 2½-ton electric truck has been purchased by a large horticulture firm in Rochester, N. Y., for carrying trees, fertilizer, supplies, etc. collection.

Motor buses carry passengers, mail and freight between Lemmon and Meadow, S. D.

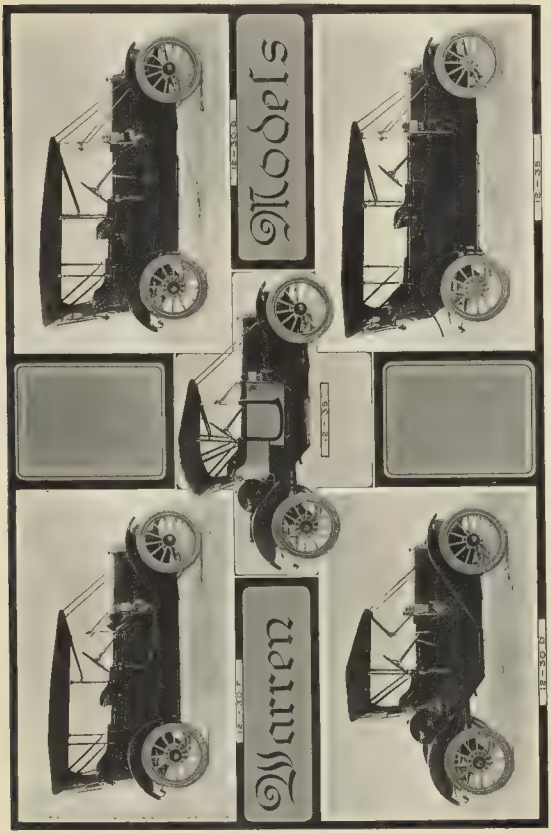
WELLS-FARGO TO USE TRUCKS

The well known Wells-Fargo Express Company has been experimenting with motor trucks for some time past, and has been so convinced of their economy that it plans to invest heavily in mechanical equipment. Branch managers have been notified to prepare for the new equipment, and garages have been planned.

The Cross-Magill Motor Truck Co., has been recently incorporated with $100,000 capital stock and will control the eastern territory for the distribution of Gramm motor trucks. Offices have been opened at 30 Church street, New York City.

Knox Insurance Patrol.

The Knox Insurance Patrol, Model R-5. Motor 4-cylinder, 40 h. p., water cooled, double side chain drive; wheel base 103 inches, three-speed transmission; pneumatic bolted on tires; demountable rims, 38 x 6½ inches front, 38 x 4½ inches rear, space for 36 covers and 12 men; two 3-gallon extinguishers, four lanterns, two axes, horn or gong and lamps included in equipment; speed 30 miles per hour.


Models
Warren
12-30
12-35
12-33
12-30
12-35

The 1912 Warren

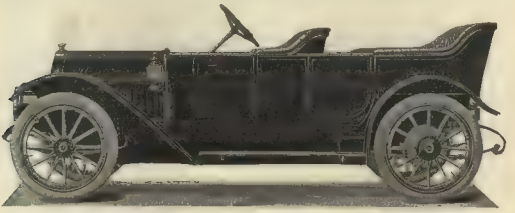
The Warren Motor Car Company, of Detroit, Mich., is placing upon the market for the coming season three standard models built upon three different chasses. These are numbered "12-30," "12-35" and "12-40." The Warren "12-30" is the 1912 model of the well known Warren "30," which attained such popularity during the past season.

Feeling that its performance has been such as to give entire satisfaction, the Warren people are making practically no change in this car for the coming season. The same motor, transmission and axles are used. The springs are of the same size, but due to the use of new material have added flexibility with increased strength, making for easier riding qualities and greater safety.

The motor has four cylinders cast en bloc, with a bore of 4⅛ in. and a stroke of 4½ in. The heads are cast integral. The cylinders are L shape, the valves which are of 1 9-16 in. diameter, being thoroughly enclosed, all on one side. The valve push rods are revolving, of the mushroom type. The pistons are carefully hardened and ground and carry four rings

The connecting rods are drop forged and have bearings of phosphor bronze. Lubrication is by splash with a sight feed on the dash.

Ignition is taken care of by two distinct systems using Bosch high tension magneto and a single union coil with high tension distributor. Two complete sets of spark plugs, eight plugs in all, are used. All wires are encased in fiber tubes.



The Warren "12-40" Fore Door Touring Car—$1700.

This car has a 116 in. wheel base, motor four-cylinder, 4¼ x 4¾, cast en bloc. Notice the compartment running the full length of the running board. The clutch is of the cone type; transmission three speed selective sliding gear. All control levers are inside the fore-doors, which are removable, a feature which many will appreciate in summer.

The motor has a bore of 4 in. and stroke of 4½ in., and is provided with two distinct and separate sets of ignition including Bosch high tension magneto and a high grade coil. The tires are 34 by 3½ in., wheel base 110 in.

The equipment for 1912 includes detachable fore doors, full set of oil and gas lamps, automatic wind shield, silk mohair top and top cover.

The Warren "12-35."

This car, with a somewhat larger motor than the "12-30," and differing in several features from that car, may be had for $1450 with a two-passenger roadster body and for $1500 with a five passenger touring car body. This is a distinctive car of classy appearance. The brasses are black enameled and throughout the appearance is one that will attract attention. Both the touring car and roadster have subdued and restrained body lines giving a straight line torpedo effect without any of the freakishness which is sometimes seen.

The timing gears are housed in a grease tight case. From them is driven the cam shaft, which has three bearings and the timer shaft, which is vertical. Cooling is by water, the water jacket being cast integral. The water jacket cover is of polished aluminum as are the valve plates and the intake manifold.

The radiator is of the vertical tube style and air is drawn through it by a 16 in. six bladed fan. Water is circulated by means of a centrifugal pump.

Transmission.

The transmission is of the selective sliding type and gives three speeds forward and one reverse. Transmission bearings have been a subject of much study by the company and the transmission equipment in that respect is one which means great efficiency and low absorption of power through friction. The main and counter shafts are provided with large size roller bearings and an annular ball bearing is provided inside the sleeve gear.

The clutch is of the cone type and is made of aluminum faced with burn proof leather. The slip springs are adjustable, enabling the action of the clutch to be regulated. The clutch shaft is short and is a steel forging working in a double sliding universal joint which is also a steel forging.

Drive is by shaft from the transmission to the bevel gears of the differential. The shaft is of nickel steel. The differential bearings are roller and the rear axles are of the semi-floating type. The front axle is of the I-beam type, drop forged, and the steering reach rod is at the rear. The steering knuckles and arms are also drop forged.

The steering gear is of Gemmer manufacture, with a reduction of 8 to 1, and is irreversible and adjustable. The steering wheel is 18 in. in diameter, the wood being polished cherry and the spider being of polished aluminum.

The frame is of pressed steel with strong but light integral gussets. Motor and transmission are carried on a sub-frame. The front springs are semi-elliptic 2 in. x 36 in. The rear springs are ¾ elliptic, 2 in. x 48 in.

The wheel base is 112 in. and the tread 56 in. For Southern trade the tread may be 60 in. The brakes are in two sets, on the rear wheels, with face of 2 in. and a diameter of 12 in. The surface brake is of the contracting variety, while the emergency brake expands.

Tires are 34 x 3½ in., being optional between Firestone, Goodrich and Diamond makes. The wheels are of the best second growth hickory and have twelve spokes.

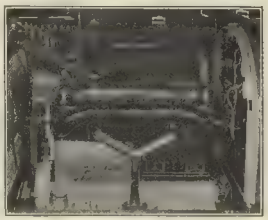
The body has a wood frame with metal seats, upholstered in No. 1 machine buffed black leather. The fore doors are removable and the materials in finish are of the highest quality. The color design is of Warren blue with gray wheels.

The equipment is quite full, with detachable rims, full set of lamps, Searchlight gas tank, Bosch magneto, complete set of tools, horn, robe and foot rails, ventilators, top and top cover and automatic wind shield.

The Warren "12-40."

This car is supplied with a five passenger fore door torpedo body and sells for $1700. This has a four-cylinder motor 4¼ x 4¾ in., built upon the same design as the "12-35" motor. The clutch is of the same type as that in the "12-35."

The transmission is housed in a one piece aluminum case with the counter shaft below the main shaft instead of alongside, as in the "12-35." Both shafts are mounted on annular ball bearings. The gears and shafts are of chrome vanadium steel and the shifting forks are of bronze. The reverse gear shaft is removable from the exterior of the transmission.



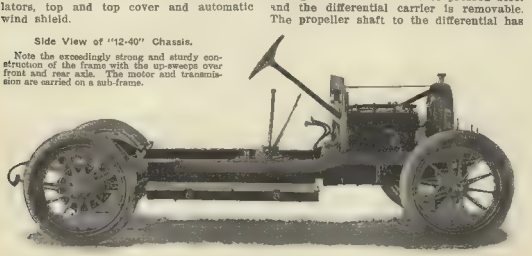
Valve Side "12-40" Motor.

This shows the valve side of the Warren "12-40" motor. One of the polished aluminum valve rod plates has been removed to illustrate the accessibility of the valve rods for adjustment. The carburetor may be seen in part. It is also easily accessible for adjustment. The intake manifold is of aluminum. Note the fibre tube carrying the wires to the spark plugs.

The rear axle is of the full floating type and runs on New Departure ball bearings throughout. The cover is of pressed steel and the differential carrier is removable. The propeller shaft to the differential has

Side View of "12-40" Chassis.

Note the exceedingly strong and sturdy construction of the frame with the up-sweeps over front and rear axle. The motor and transmission are carried on a sub-frame.



two Spicer universal joints and a special torque arm is provided. The steering gear and wheel is of the same type as that of the "12-35."

The frame is of pressed steel with the motor and transmission carried on a subframe. Springs are semi-elliptic front, 2¼ by 38 in. and ¾ elliptic rear, 2¼ by 48 in. They are fitted with hardened bolts, bushings and shackles and the bolts are provided with grease cups. The wheels are artillery type with 1½ in. spokes and carry 34 by 4 in. tires of either Diamond, Firestone or Goodrich make.

The wheel base is 116 in., tread 56 in. with 60 in. optional for Southern use. The body is of metal, extremely roomy and comfortable, for five passengers. The fore doors are removable. The foot and toe boards are of aluminum. The fenders are enclosed over their full length and the running boards are of aluminum castings with compartments 4 in. deep. The covers to these departments are held by a polished brass box.

The control of the car has been well considered and all control levers are inside the body. The hand levers are drop forged; the gear shifting lever works in an H plate of polished brass; a device is provided to prevent crashing with the reverse gear. The equipment is full and complete, consisting of demountable rims, 34 x 4 in. tires, tire brackets, magneto, black enameled oil lamps, gas headlights with Searchlight gas tank; complete set of tools, horn, robe and foot rails, ventilators and muffler cut-out.

MARATHON HUNTING CAR.

The widespread use to which automobiles are placed nowadays is illustrated in the combined hunting and touring car recently built by the Southern Motor Works, of Nashville, Tenn., for J. J. Gray, Jr., a millionaire phosphate man, of Rockdale, Tenn.

Mr. Gray, who is an enthusiastic hunter, in placing his order for a Marathon Touring car recently, said that he wished the manufacturers could design him a car in which he could carry his dogs and hunting apparatus for extended trips, and so the combination car was built.

The hunting body, which is shown mounted on the chassis, can be readily detached at the rear of the front seat, and the touring car body shown in the foreground put in its place. Mr. Gray has already taken several trips in his car and recommends this construction most heartily to hunters.

PENNSYLVANIA MOTORISTS ORGANIZE

Motorists of central Pennsylvania recently organized an association known as the "Central Pennsylvania Motor Club." Harry Shook was elected president, Carl W. Rothfuss and A. C. Jacobs, vice-presidents, A. M. Hoagland treasurer, and George L. Fisk secretary. The home town of the Club will be Williamsport. A club house will be secured and the enrollment looks promising.

The Southern Motor Works, of Nashville, Tenn., has increased its capital to $600,000, in order to take care of the rapidly growing business. The name of the company has also been changed to the Marathon Motor Works.

AROUND LAKE MICHIGAN

Henry J. Adams, his wife, sister and two children, two and four years old, of Fostoria, O., recently completed their trip of 1,700 miles around Lake Michigan, this being the first time that this great lake had ever been encircled by automobile. The trip was undertaken in order that Mr. Adams might gratify his ambition to bound Lake Michigan by automobile.

He and his family went to the Reo factory at Lansing, Mich., where they got their new 1912, $1,000 car, which they used in their trip.

Have you ordered that November Number yet?

Do it Now!

Bonnet, fenders and splash guards are of steel. The fenders lap well over the wheel, precluding all possibility of road splash reaching the occupants of the car. Standard painting is, bodies and door panels deep green, striped with light green, under body, bonnet, radiator, frame, fenders and like, black. Wheels, axles, springs and running gear parts below the frame, Amplex fawn

Rear construction of the Amplex 30-50 two cycle, four cylinder car, transmission carried in the rear axle. Note the substantial solid torque rod with ball joint, ribbed brake drums.

striped with black. On the open cars, seats are trimmed in hand buffed black leather. For the enclosed bodies a variety of materials will be furnished as trimming. Various types of bodies are to be had from runabout to full fledged fore door touring types as well as the closed type. The equipment includes cape top and envelope with side curtains, Truffault-Hartford shock absorbers, self starting device, combination oil and electric side and tail lights, gas head lights with gas tank or generator; horn, tire irons, tools, robe rail, foot rest and the like. The enclosed bodies are equipped with push button, buzzer, speaking tube, folding foot rail, toilet cases, dome electric light with switch and battery, and robe rail.

In the touring car the gasoline feed is by pressure from a tank under the seat, front, with a three way gasoline valve which controls the main supply and a five gallon reverse tank with a total capacity of 23 gallons. In the toy tonneaus and roadsters the feed is by pressure, there being an automatic pump fed from the exhaust line. The roadster tank is of 40 gallons capacity, the toy tonneau 23 gallons. A hand air pump with a three way valve permitting of either gravity or pressure fuel feed is fitted to all models for use in case of emergency.

Amplex cars are fitted with various types of bodies, the price being $4300 f. o. b. factory.

The High Duty Two Cycle Elmore

By C. E. Morris

All Elmore two cycle cars of the 1911 model are now fitted with the so-called high duty Elmore motor which was featured during the season of 1910 and which gave very good results, and, to a great extent marked a radical departure in two cycle motor construction that may reasonably be regarded as a step in the right direction and which on the whole has rendered the two cycle unit more simple than ever. For 1911 means is provided for advancing and retarding the distributer which is the secret of the success of the Elmore high duty motor. The makers of these cars, The Elmore Manufacturing Company, Clyde, Ohio, have long been exponents of the two cycle motor and this year offer one new car known as Model 25, this being of 30 h. p. with roadster type body, selling at $1200, the open touring car at $1250. The Model 36 B in fore door touring type sells at $1750 and this, according to the makers, is of full 50 h. p. equipped with two systems of ignition.

Model 36 B 50 h. p. two cycle Elmore, fore-door type body with control levers within the body. Ignition high tension with Atwater Kent system and K-W magneto. Wheel base 114 in., semi-floating rear axle with annular ball bearings, motor fitted with priming device, signal horn carried inside dash under bonnet, pistons are of two diameters, the lower or larger section acting as a compressor, the mixture being drawn in through the distributor or rotary valve driven from motor gears in forward compartment, charge after compression is passed back to the distributor to be delivered to the explosion chamber of another cylinder and so on. Price $1,750. Semi-elliptic springs forward, three-quarter rear.

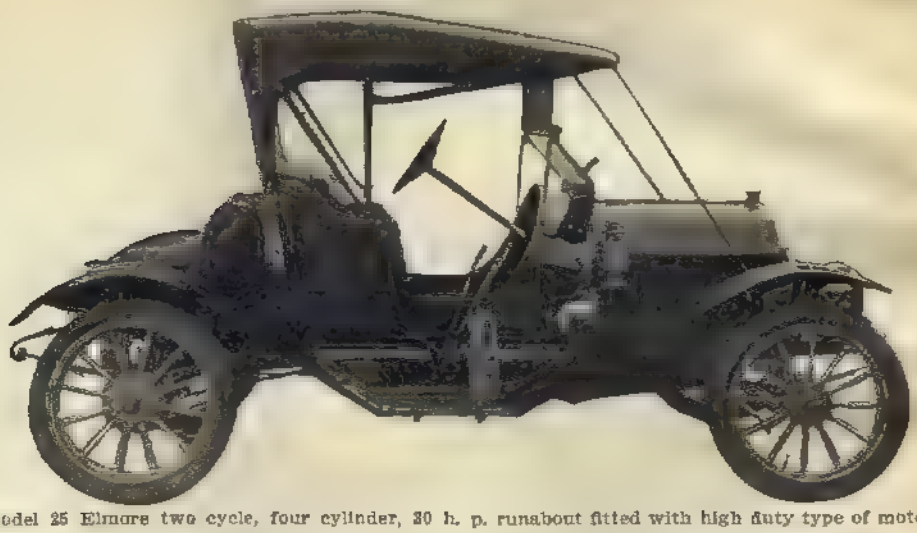
There have been some changes in the general construction of the 1911 Elmores and these are of the sort to be appreciated by Elmore owners. As above stated the distributer can be regulated, this making for economy of fuel, a high tension K. & W. magneto is added, this running at engine speed and there is also the well known A-K system of ignition. A priming device has been added so that all four cylinders may be primed at the same time without leaving the seat, the carburetor has been modified and there are some changes in the carburetor design and a multiple disc clutch built of alternate bronze and steel plates is used this year in place of the expanding ring type of a year back.

Chassis of Model 36 B, 50 h. p., four cylinder, two cycle Elmore car. Side members of pressed steel frame upsticked over rear axle. Note brake details and tringular tubular torque rod

The High Duty Elmore Motor.

Inasmuch as the so-called high duty type of motor is used on all Elmore cars this season a description of the working of the unit will not be amiss here. The Elmore high duty piston is of two diameters, the cylinders of course being formed for the reception of the piston so that there must also be two diameters of cylinder wall. The upper section of the Elmore piston is the smaller, this conforming to the conventional design. Compression rings are fitted to both the top and bottom of the piston and the usual deflector plate is formed integral with the head. There is contained within the crank case the distributer mentioned above, this having a series of ports, this member extending the full length of the crank case, cylindrical in design and revolved from gears in a forward compartment and is divided laterally so that it consists of two chambers, one having openings or ports on one side of the cylinder, the other having openings on the opposite sides. When the piston passes downward a vacuum is created in the annular space which exists as the larger portion of the piston travels down the cylinder wall. The carburetor in the meantime has been supplying the mixture which is passed into the distributer. The Elmore motor is of course of four cylinders, so that when the gas has been compressed in the annular pumping section it is forced back to the distributer under about 6 pounds pressure and is delivered by the distributer to the firing chamber. The charge drawn from the carburetor and passed through the distributer to the pumping section of the cylinder and compressed is not utilized in the firing

Intake side of Elmore 30 h. p., four cylinder, two cycle motor, cylinders cast separate with integral water jackets note location of carburetor over the distributor manifold which is cast integral with the crank case, lever shown at the rear advances or retards the distributor so that adjustment of the mixture effects saving of fuel.



Model 25 Elmore two cycle, four cylinder, 30 h. p. runabout fitted with high duty type of motor.

chamber of that particular cylinder but is passed by means of the distributer to another cylinder. Each revolution of the crank shaft prepares each of the four cylinders in turn to receive, compress and explode its charge. Basic patents of this motor are held by the Elmore company. It is claimed by the makers that with the means provided for regulating this distributer there is greater economy in fuel than heretofore.

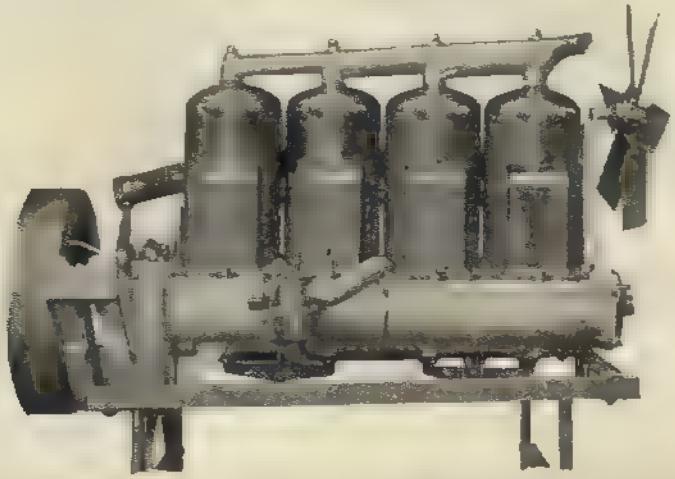
The cylinders of the Elmore motor are cast singly and retained to an aluminum motor base in the usual manner. The distributer is placed on the right side of the crank case and within it the carburetor inlet being amidships of the distributer section. The smaller motor is 4 x 3½, the larger 4½ x 4.

Cooling is by water, the jackets being formed integral with the cylinders.

The carburetor used on the Elmore is of the company's own make and is controlled in the usual manner from the steering wheel. A hot air pipe is run from the exhaust manifold to the air intake on the carburetor, the exhaust being on the left side of the motor. To prime the cylinders there is placed on the inside of the dash a small tank which is filled with gasoline, the liquid being conveyed to the cylinders through ¼ inch brass tubing, and a rod worked from the dash within easy reach of the driver opens all four cocks simultaneously, thus allowing the gasoline from the charged line to enter the cylinders. This line of brass tubing is filled with gasoline at all times when there is liquid in the small storage tank on the dash.

Ignition.

On the larger car there are two sources of ignition, the Atwater-Kent double system, which has been featured on previous Elmore models and a K. W. magneto which runs at engine speed, being used. Control



50 h. p., four cylinder, two cycle Elmore motor, high duty type. Note oil leads, one of which delivers oil to the distributor so that the lubricant is admitted to the cylinders with the mixture.

is from the steering column and dash in the usual manner. The magneto is placed on the left side of the motor, the two sets of plugs being located on the right side, the ignition cables leading from the magneto to an overhead cable guide.

Lubrication.

The lubrication of the Elmore high duty motors is by a non-circulating system, the oil being carried in a reservoir or pocket at the rear of the crank case in the supporting arm. Oil is conveyed through leads to the crank shaft bearings and the intake manifolds where it is carried with the mixture to the cylinders and through another lead to the motor gear used for driving the rotary valves or distributer. The crankshaft bearings are fitted with pockets and collect the oil from the crank splash. Each connecting rod is provided with a scoop which lifts the oil, and the bearing is fitted with a duct which provides for ample lubrication of the crank pin bearings. The system of admitting oil with the mixture to the cylinders has worked out well in previous Elmore models.

Clutch and Transmission.

The expanding ring type clutch featured in the Elmore in 1910 is supplanted by a multiple disc set, there being 25 plates of bronze and steel, 12 steel and 13 bronze, with cork inserts. There are no springs on the plates. The clutch is arranged in a compact unit and the operating lever is of the sliding type. A three point suspension is had for the unit clutch and transmission, there being three speeds forward and reverse. The gear-set is worked in the usual manner by the hand side lever. The clutch thrust bearing is ball type and the bearings of the transmission are annular ball.

Rear Axles.

In all Elmore cars for 1911 final drive is through propeller shaft to the rear axles. The Model 25 or small car is fitted with roller bearings in the rear axle and the propeller shaft and main axles are of high carbon steel, heat treated. The bearings of the roller type are nickel steel rollers running on removable hardened casings and sleeves. In the larger car the semi-floating rear axle is equipped with annular ball bearings, these of the double row type. The pinion shaft is fitted with two double row ball bearings and the axles are equipped at the outer ends with double row ball bearings and the rear axle gears are supported in the same manner. The axle housings are tubular steel.

The front axles of the Elmore are I-section drop forged steel with integral steering jaws and spring seats. The steering assembly is carried back of the axle.

Frames.

Frames in both the Model 25 and Model 36 Elmore cars are made of pressed steel, channel section, upswept at the rear and reinforced by cross braces and gusset plates. Springs are supported in the usual manner, front sets on both cars being semi-elliptic, while on the small car they are full elliptic rear and three quarter elliptic on the Model 36 B. In the large car a triangular tubular torque rod is fitted extending from the rear axle housing to a cross member of the frame forward, this being fitted at the forward end with a sliding connection which permits the front end of the torque rod to rise and fall. This takes the place of the usual spring buffer.

The wheels on the Model 25 are 32 inches in diameter, 3½ inch tires front and rear; the Model 36 B is equipped with 34 inch wheels, 4 inch tires front and rear. Wheel base of the small car is 108½ inches, large car 114 inches, gauge being 56 inches.

Control.

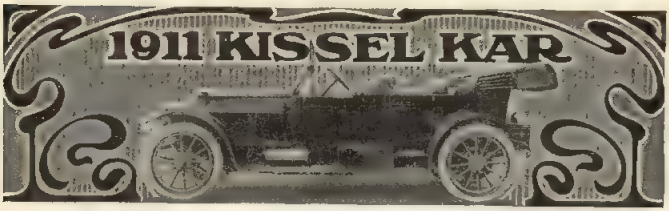
Control is in the usual manner, spark and throttle levers being mounted above the steering wheel and there is the usual array of dash accessories. The steering post is comfortably inclined and the control levers are placed at the right. There are two sets of brakes of the usual order working on the rear wheel pressed steel drums, these applied through steel pull bars, adjustable, action being equalized, one set worked by the adjustable foot pedal, the other by the hand side lever. On the Model 36 B fore door car the control levers are placed inside the right body panel. The gasoline tank is carried beneath the front seat and feed is by gravity.

ALDEN SAMPSON MOVES TO DETROIT

Without any interruption of manufacturing operations, the plant of the Alden Sampson Manufacturing Company, in Pittsfield, Mass., in which all heavy duty Sampson freight motors have been manufactured, has been removed to Detroit, Mich., where the Sampson delivery motors are being built. Four special trains of ten cars each were required to complete the transfer of the many heavy pieces of special machinery, tools and materials. The entire transfer was made in three days.

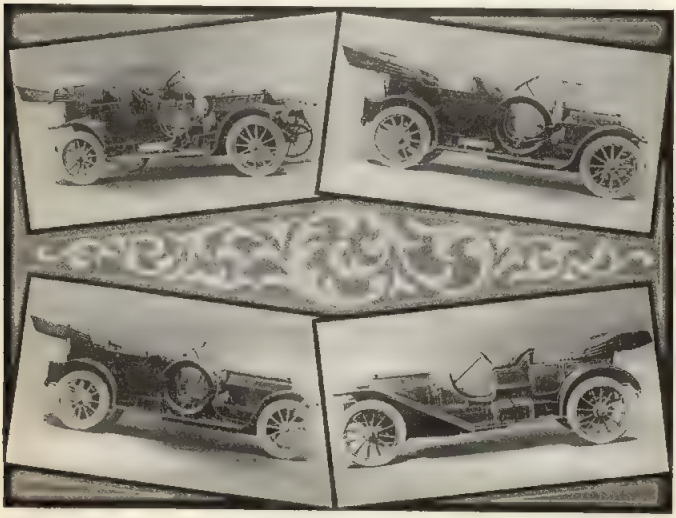
The removal was made in accordance with the aim of the United States Motor Company to concentrate and conserve manufacturing and selling facilities and energies. Also, aside from the manufacturing economies gained by centralizing the work, the Sampson Company found that it was impossible to get sufficient skilled labor in Pittsfield, or in its vicinity, and the property of the company in that city did not permit of expansion necessitated by the great growth of the company's business.

The E. R. Thomas Motor Co., of Detroit, Mich., have built a handsome limousine for Mrs. Leslie Carter, on a Model K, 70 h. p. Thomas chassis. The car is most handsomely appointed.



Kissel Kar models for 1911, by the Kissel Motor Car Co., Hartford, Wis., show no radical or experimental changes. The best standards and approved features of automobile construction are maintained, the 1911 models tending to finer lines, and general lowering of car in accord with the best construction practices. The basis of construction of the various types will be a standard chassis adapted to the desirable styles of open and closed body. The principal change from last year's construction will be a double drop in the frame which, while it lowers the car, lessening the leverage of side thrusts, retains adequate road clearance, in fact, greater road clearance than on other cars adopting the standard double drop frame. This double drop is obtained by lowering the spindles, bringing the car closer to the ground, at the same time affording greater opening for the springs, or rather more room for spring play. This change adds very materially to the comfort of riding.

Throughout the whole Kissel line the wheel base is materially increased. The braking system is also changed on all models except L. D. 11, the 1911 system being internal and external, 14 inch by 4 inch face

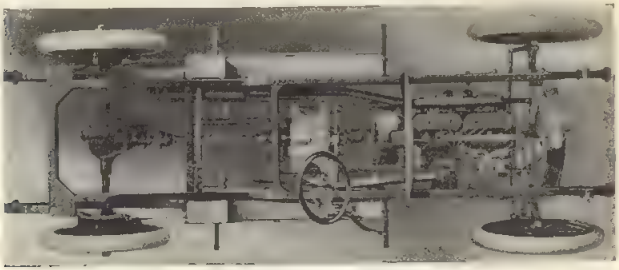


Group of 1911 Kissel Kars.

Fig. 1. In the upper right is the Model D. 11 Touring Car, $2,000, and below it is the Model D. 11 Tonneau, also $2,000; in the upper left is shown the Model L.D. 11 Touring Car at $1,500, and below it Model F. 11, $2,500. Details of these cars are given in the text

instead of double internal as used on 1910 cars, and retained on L. D. 11.

Motors remain the same in style and principle; magneto and pumps are on one side of the motor and all valves easily accessible on the other side. A notable feature of the motor is the self-contained oiling system, which has a reservoir in the lower part of the oil basin, with a geared pump securely bolted to one end, pumping oil through tubes to different sections. The top section of the basin is equipped with an overflow opening, keeping the oil at a proper level. The oil level can be raised or lowered to meet different needs, such as city driving which necessitates motor running without smoke, long hill work, or high speed. This adjustment is secured by a brass tube in the oil basin connecting with the overflow outlet. A lever attached to one side of the basin is pressed into this tube, regulating the flow. This lever is attached to the adjusting rod, enabling the driver to raise or lower the oil lever as he sees fit, and at any time. A gauge is provided to insure proper oiling at all times.



Plan View of Kissel Kar Chassis.

Fig. 2. This illustrates the arrangement of the four-cylinder models, shows the wide filler cap on the radiator, engine and transmission mounted on a subframe, the brake eveners with outside direct pull rods to the 14-inch diameter twin brakes on the 5-inch faced drums on the rear wheels.

Machine Methods.

Machining on the motors is accomplished with the utmost care and precision. In addition to grinding the pistons and the cylinders, each piston is lapped in the cylinder for which it is intended by a special lapping machine. The piston rings are also lapped in the grooves of the piston, to which they are fitted. All parts of the motor are carefully weighed, balanced separately, and then balanced with fly wheel and connecting rods, giving a smooth running, perfectly balanced motor without vibration at any speed. Every model is equipped with dual ignition employing either Remy magneto and dry cells, or the Bosch dual system.

The shifting mechanism remains the same on all models except on L. D 11, in which it will be placed outside of the frame instead of as on the other 1911 models. Pedal system for brakes and clutch will be adjustable for the comfort of various sized people who may drive the car.

Transmission in selective type, four speeds forward and reverse with direct drive on third speed and geared up 25 per cent. on fourth. Heat-treated Chrome vanadium takes the place of carbon steel. A complete universal gives a full universal movement, eliminating danger of binding or back-lash, possible with other joints. The clutch is cone type, leather faced with adjustable springs beneath the leather, eliminating the jerking. A ball brace with brass covering takes the place of the annular bearing on the clutch hub, doing away with the noise characteristic with side rollers in throwing out the clutch.

Axles and Steering.

Front axle "I" beam with spindles lowered and made heavier. The rod is placed in rear of axle instead of in front, and the steering arm placed above the axle instead of below. This arrangement gives protection against accidents due to disarrangement of steering apparatus caused by hitting an obstacle. The steering arms are machined with a taper and fitted with a key doing away with any possibility of working out of correct positions. Spicer drive, fitted with hardened ground pins and brushings, and with steel cover which holds grease and protects the joint from dust and water are standard on all Kissel Kars.

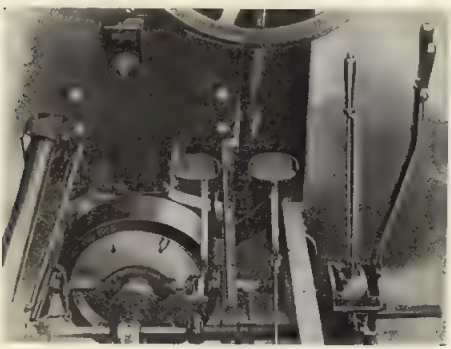
The rear axle remains of the standard floating type with tubing pressed into housing and axle ends by eight tons hydraulic pressure and then securely keyed and riveted.

All forgings, such as steering knuckles, steering arms, shafts, levers, etc., which are subject to undue strain and vibration, which

make them liable to crystallization, are made of chrome-vanadium steel, heat-treated after machining, preventing deterioration through crystallization.

Bodies have wood frame work with metal sides and aluminum mouldings, or designs, which eliminates joints as far as possible. The door frames, for instance, are made with a single bending, instead of being made in two or three sections with the unnecessary duplication of joints tending to open by vibration. Also, instead of having a cheap construction of grooving the moulding in the metal, an aluminum moulding is employed which permits the metal to be first fastened to the frame work and then fasten the aluminum moulding securely to both the metal sides and frame work in a way that forestalls any possibility of the moulding working loose.

All head boards and door mouldings for cushions are made of solid mahogany with piano finish.



Kissel Kar Control Levers.

Fig. 3. On the right is shown the gear shift and brake lever, the gears being controlled selectively, the right pedal is for the service brake and the left pedal controls the cone clutch with easy engagement springs

Finishing.

No. 1 machine, buffed leather is used on trimmings of L. D. 11 models, and only genuine hand buffed leather is used on the F. 11 models. Genuine gray hair used on all bodies. Running boards, fenders, etc., are enclosed with metal and properly fitted Dash boards, deck strips and strip over doors are solid mahogany, with piano finish. Finishing requires 26 operations and coats, the last coat being the genuine English varnish, which gives the elasticity and durability essential to good appearance under the weather conditions, wear, washing and rubbing to which an automobile is subjected.

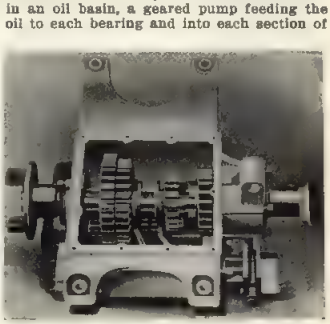
The Kissel factories build the Kissel Kar complete. A full equipment, special tools, special jigs, oil furnaces, forges, heat-treating ovens, gray iron, brass and aluminum foundrys, body building, plating, buffing and polishing departments are maintained.

The most striking change in specifications occurs in model F 11. This model last year was a four-cylinder car, 50 h. p., and is changed for 1911 to a six-cylinder sixty h. p., to meet the demand for a six, at the medium price.

The Kissel Kar 3 ton truck and the Western Special are the two Kissel Kar newcomers for 1911. The truck was described in our October number, page 193

The Western Special.

The entirely new model for the season of 1911 is known as the Western Special, and was designed particularly for use over rough country roads. The frame has but a single drop and the clearance is high. The wheel base is 120 inches, and the springs ¾ elliptic, both front and rear. The motor is four cylinders, cast in pairs, 4¼ by 4½, rated as 50 h. p. It has a four speed selective change gear direct on the third speed. The change speed gears are mounted on F. & S. annular ball bearings. The front axle is I-beam section, drop forged and the rear axle is of full floating type. The brakes and equipment are the same as on the other models, and lubrication is by a self contained oiler in an oil basin, a geared pump feeding the oil to each bearing and into each section of



Kissel Kar Change Gear.

Fig. 4. This shows the compact four speed and reverse selectively operated change speed gear used on the larger models for 1911. All gears are of chrome nickel steel and mounted on F. & S annular ball bearings.

Kissel Kar Rear Axle.

Fig. 5. Full floating type, fitted with twin brakes at each end, each set of brakes operating on a single steel drum 14-inch diameter by 5-inch face. By this system all brakes are internal expanding and protected.

the base. Ignition is by Remy magneto with coil and dry cells. This model sells with regular equipment for $2000.

Brief Specifications of Model L. D. 11.

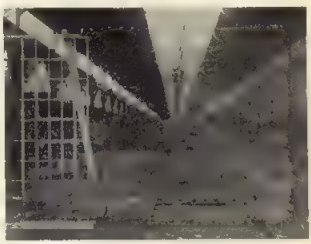
This machine is of the four cylinder, 30 h. p. type, fitted with touring car or baby tonneau at $1500 and coupe at $2100. Cylinders are 4¼ by 4¼, the transmission being of selective, three speeds forward and reverse type, on F. & S. annular ball bearings. There are two internal sets of rear brakes, the common drums being 14 inches diameter by 5 inches face; ¾ elliptic springs are used, and the bearings throughout are of Timken Roller, except in the transmission. The wheels are 34 inches in diameter, with 4 inch tires on quick detachable rims, and the wheel base is 116 inches. Ignition is by Remy magneto, with single unit coil and dry cells; lubrication is by a self-contained oiling system, consisting of a geared pump in the oil basin, forcing the oil to each bearing and to each compartment of the crankcase. The regular equipment is the same for all the models, consisting of two side lamps, tail lamp, horn and complete set of tools. A complete equipment, listing at $200, includes mohair top, top cover, robe rail, glass front, gas lamps and gas tanks.

Model D. 11 Touring Car.

This machine has a 50 h. p. four-cylinder motor, 4⅞ by 4¾. The general specifications are the same as the other model, except the wheel base is 124 inches, wheels 36 inches with Q. D. rims, 36 by 4 inch tires are used front and rear, lubrication is the same, the oil reservoir carrying about 1½ gallons, sufficient at least for 200 miles. As a Touring Car or a Baby Tonneau it sells for $2000; Coupe $2600, Limousine $3200.

Model F 11 Touring Car.

The F 11 is a six-cylinder machine, cylinders 4½ by 4¾, cast in pairs and rated at 60 h. p. It seats 7 passengers and the wheel base is 132 inches, tires 36 by 4 front, 36 by 4½ rear. Ignition is by Bosch magneto, dual system. The change speed mechanism is of selective sliding gear type, giving four speeds ahead direct on the third. The Touring Car and Baby Tonneau sell for $2500, Coupe $3100, and the Limousine $3700.

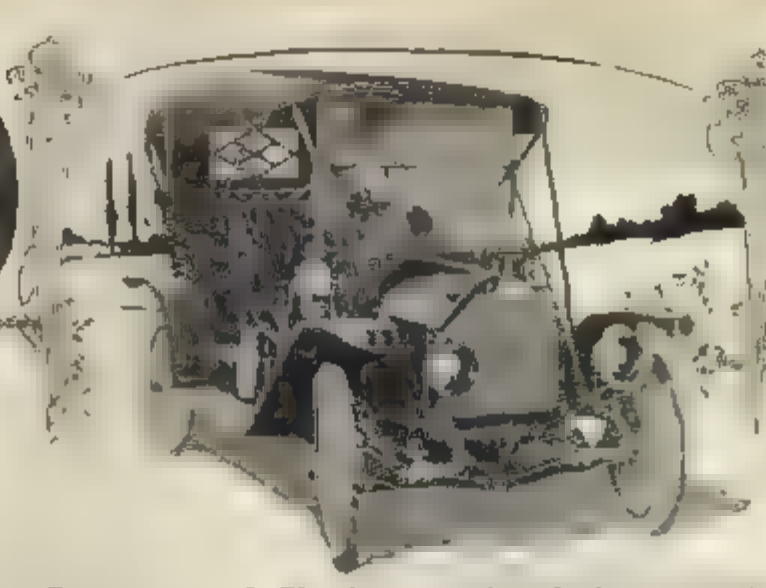


New Crane Way Building of the Ford.

The "Crane way" building is the very latest addition to the many buildings of the mammoth new factory of the Ford Motor Company at Detroit. Erected directly behind the immense saw tooth roofed machine shop, and running the entire length of the building, the crane way is in a most conspicuous and advantageous position. It's a mammoth store room, 860 feet long by 67 feet wide, where all raw materials for use in the manufacture of the Ford car are to be stored immediately on their receipt from the railway freight cars. Running the entire length of the building is a huge crane for transporting the materials from the railroad to any part of the store room.

Richard R. Harris has been appointed general sales manager of the Pittsburgh Steel Products Co., of Pittsburgh, Pa.

OHIO CARS

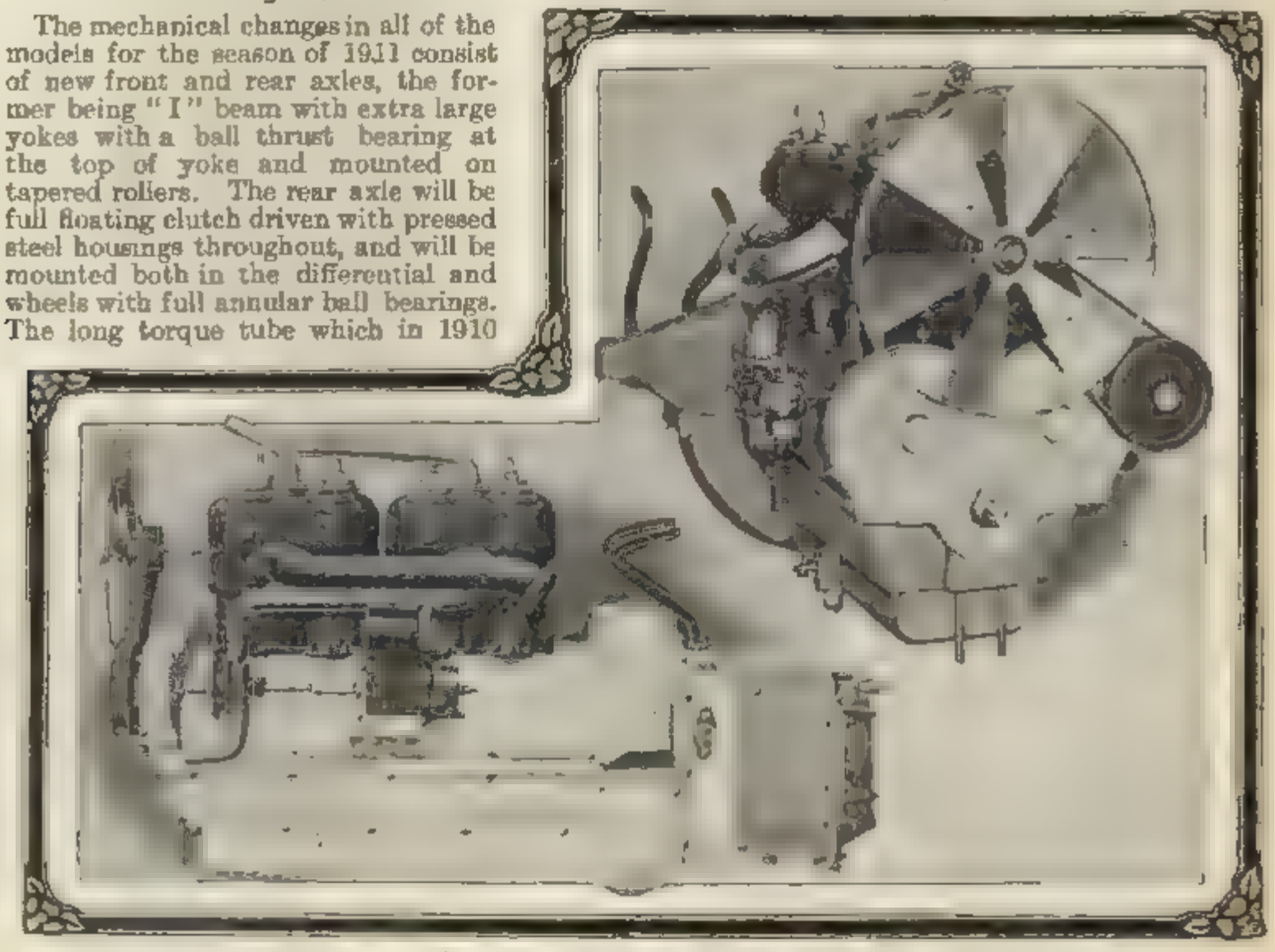


The Ohio Motor Car Company, of Cincinnati, are showing for 1911 a complete line of up to date torpedo, roadster, fore door touring car, fore door close coupled tonneau models in addition to the regular open five passenger touring car and four passenger close coupled tonneau, as used last year. A group of these new machines is shown in the accompanying page illustration. Attention has been given in the designing of the torpedo types to make them not only beautiful in outline, but so they embody features which prevent them from raising dust. To this end considerable study has been given to reduce the suction or draft at the rear of the car

Changes for 1911.

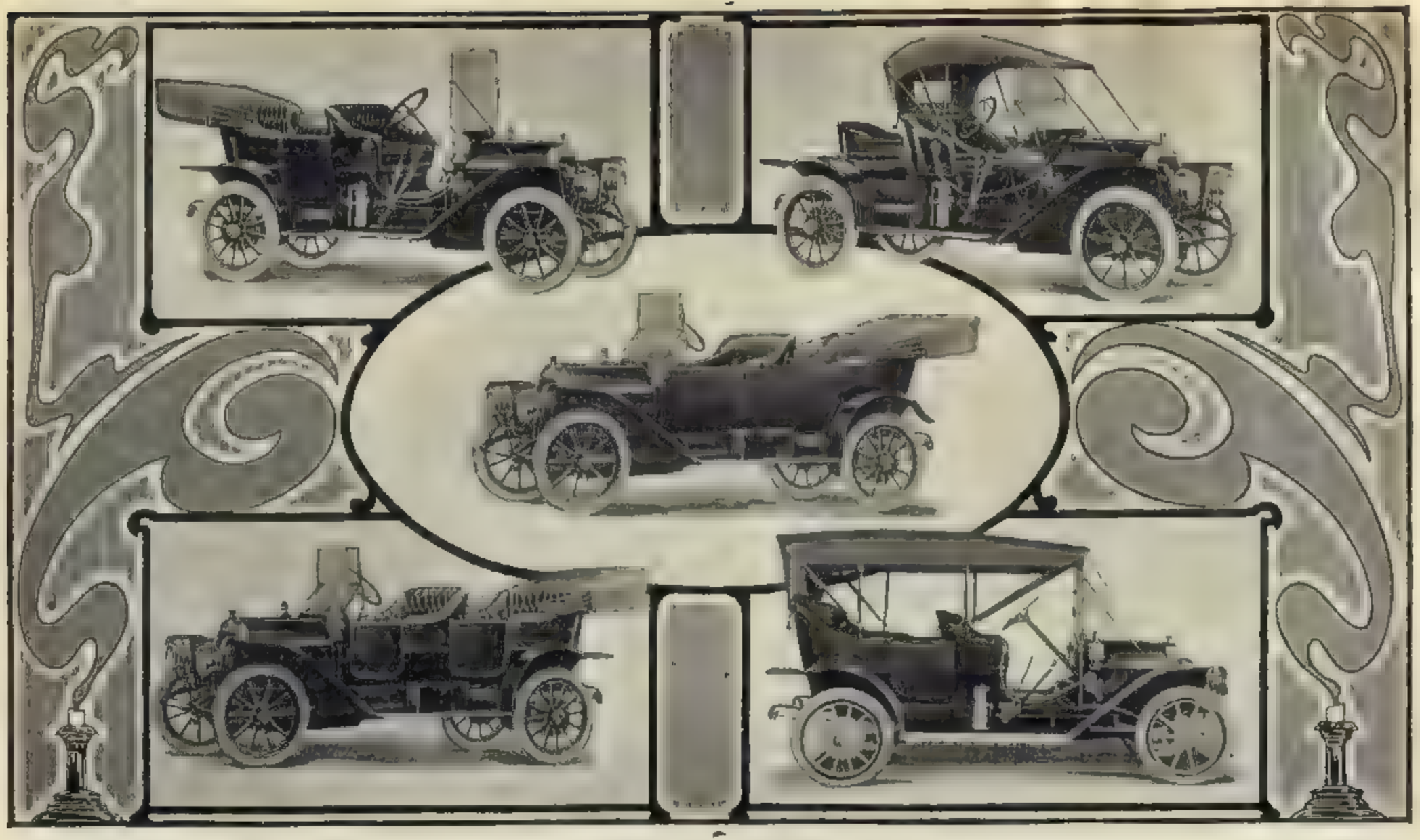
The mechanical changes in all of the models for the season of 1911 consist of new front and rear axles, the former being "I" beam with extra large yokes with a ball thrust bearing at the top of yoke and mounted on tapered rollers. The rear axle will be full floating clutch driven with pressed steel housings throughout, and will be mounted both in the differential and wheels with full annular ball bearings. The long torque tube which in 1910 enclosed the propeller shaft has been discontinued and the makers have returned to two universal joints with metal housings and leather boots same as used in 1909, as they find that construction gives greater flexibility to the riding than can be had with the long stiff torque tube. They have also added the conventional triangular torsion bar from rear axle to special cross member in frame to help take the torque of driving and braking

The four cylinder motor, with cylinders cast in pairs and valves on opposite sides will be continued for this season, but the bore has been increased ¼ of an inch, making this engine now 4½x4¾. The motor with its enclosed fly wheel and the multi-



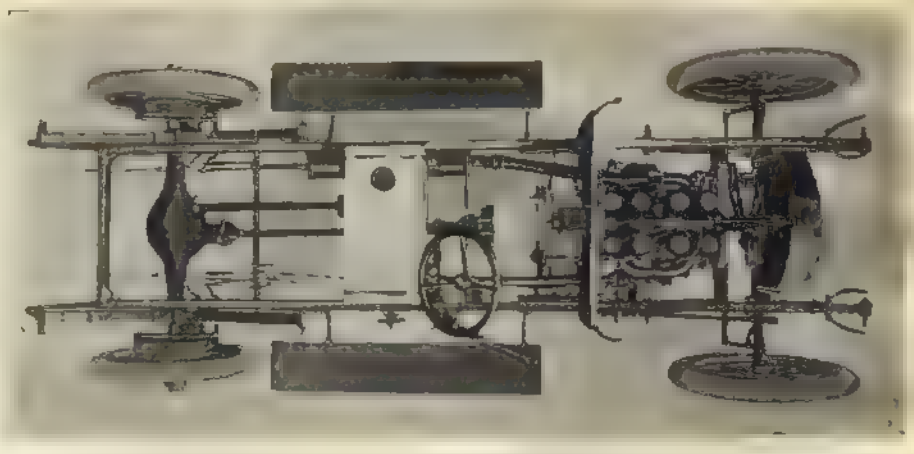
Front and Side View of Ohio Motor.

Fig. 1. This motor is of the same general type as formerly, but of larger size, it being 4½x4¾ cylinders cast in pairs. The change speed gear clutch and engine form a unit mounted at three points The lower portion of the crank case forms an oil well. A centrifugal pump and magneto are mounted as shown. All gears are encased.



Group of 1911 Ohio Models.

The torpedo type machines are new this year and have been especially designed to prevent dust raising. For this purpose great care has been taken in the design of the fenders



Plan of Ohio Chassis.

Fig 2. This view shows the arrangement of the unit power plant, the location of the gasoline tank, the liberal size torsion tube, the rear axle construction, and the brake eveners.

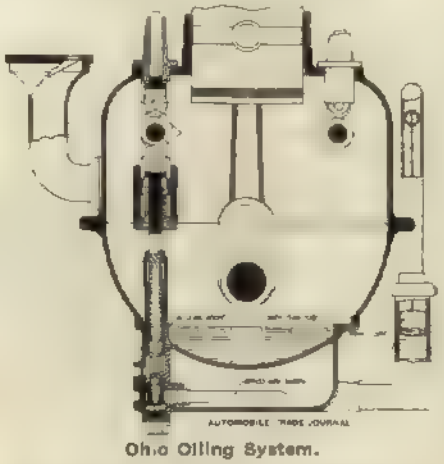
ple disc clutch, forms a unit construction, three point suspended.

The centrifugal pump is now placed on the left side of the motor, which now takes the place of the thermo-syphon water cooling system of last season.

The front end of the crank shaft and magneto shaft are fitted with generous size stuffing boxes which are packed with graphited asbestos packing and prevent any leakage of lubricant. Also a large screw packing nut stuffed with graphited asbestos packing is provided for the rear end of the transmission case and entirely overcomes any leakage of grease or oil from that member.

Special Oiling System.

It will be noted from the cut that the extra oil supply is carried in a special oil pan which is attached to, but easily removed from the bottom half of the crank case.



Ohio Oiling System.

Fig 3. The lower part of the crank case forms an oil reservoir from which the oil is pumped as shown by a plunger pump, operated directly by the cam shaft. The details of this system are given in the text.

The oil is filled into the motor through the screened top breather tube on the intake side and proper level is indicated by the sight float oil gauge and overflow try cock which is located at the side. The oil is pumped from the oil pan into the lower half of crank case by means of a simple plunger pump operated directly off the exhaust cam shaft, pump being fitted with ball seat valve and screen. The crank case is divided crosswise in the center so as to obviate an excess of oil in either end of the case when going up or down hill, and a constantly uniform level is maintained by accurately gauged overflow bosses cast integral with the case. Front and rear main bearings are taped and shellacked to prevent any escape of oil from crank case into timing case and vice-versa, or to prevent any dirty oil from clutch case working ahead into the crank case. In addition, an oil tight joint is further provided for by means of a graphited asbestos rope of ample proportions which is securely imbedded in a groove cast into the lower half of crank case

The Inside Control Levers.

In the new five passenger torpedo model, a new disposition of the control levers has been arranged so that they come well within the side door.

The gear shifting mechanism is of the conventional H slot type operated by lever A (see accompanying figure) which is bent in such a form as to make it convenient to operate.

The H slot plate B is of hard bronze polished and sets so that the top is flush with top of cork carpet with which the floor is covered. This plate also acts as a guide for the emergency brake hand lever and comes out so as to finish flush with trimming on inside of body. The control bracket is bolted to the frame and has a ledge which forms a support for the foot boards.

The emergency brake lever E is made in one piece with a boss on side which acts as a fulcrum from the bearing on under side of the frame. This boss is bored out and threaded on the inside at the outer end into which is fitted a shouldered plug to retain the lever in its bearing and grease in the hollow boss which lubricates the brake lever and gear shifting shaft.

It will be noticed with this construction that there is no bracket on outside of frame nor is the body still weakened as in the case where the levers come through the sill.

In addition to the Ohio pleasure cars, this company has brought out one commercial model for 1911, this being a panel top delivery wagon of from 1000 to 1250 pounds capacity.

On November 22nd an Ohio car left New York City in the interest of the Good Roads Association, and also to enable the A. A. A. to compile data as to the cost of gasoline, tires, repairs, maintenance, etc., on a trans-continental tour. When last reported the car was making good headway, although the roads in the South were said to be in abominable condition.

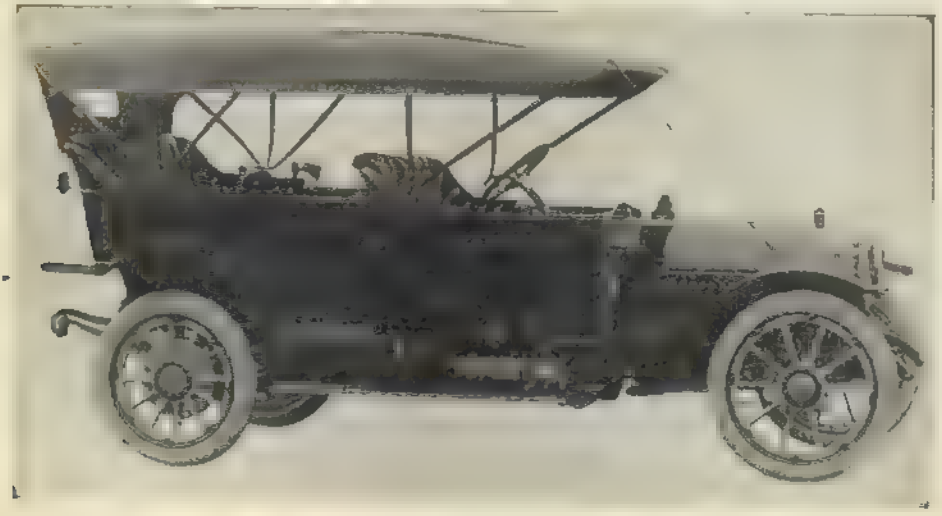
The Two Cycle Amplex

By C. E. Morris.

Conspicuous among the two cycle cars of the present season is the 50 h. p. four cylinder Amplex, the product of the Simplex Motor Car Company of Mishawaka, Ind. The car of the present season is the refinement of previous efforts on the part of the makers and as it exists today it embodies many novel features of construction and various little conveniences that make for the promotion of the comfort and welfare of the users. One of the most salient features of the 1911 Amplex is the pneumatic self-starting device which eliminates much of the cranking ordinarily necessary. The 1911 car has a wheel base of 128 inches, tread 56 inches, wheels 36 inches in diameter, tires Quick Demountable clincher of various makes with Continental demountable rims. There is something sturdy looking about the 1911 Amplex chassis with the transmission on the rear axle, that much mooted disposition of the gear-set which seems to be gaining gradually. The 1911 Amplex follows standard construction and it would appear that much care and thought have been bestowed on it by those who are responsible for the car.

The Amplex Motor.

The engine of the two cycle 1911 Amplex, four cylinder type, twin cast cylinders with integral water jackets, is rated 30 to 50 horse power, the latter figure at 900 revolutions per minute, bore being 5 1-16 inches and stroke 5 inches. Cylinders and pistons are finished by grinding so as to effect interchangeability. There are three rings above the piston pin and one below, rings ground on the outside diameter and both edges. Anchorage of the cylinders is to the aluminum motor base in the usual manner through steel studs. The connecting rods are drop forged steel I-section fitted with plain bearings, these supported in the middle section of the crank case, the crank shaft bearings all being carefully ground



Amplex fore door seven passenger touring car with control levers within the body.

On the run home deep sand was encountered and going was hard. However, the engine performed very satisfactorily and in order to meet with conditions there were frequent changes of speed. At all such occasions it was evident that the thing could be done very easily. The entire run including stops was 2 hours, the distance covered being approximately 30 miles.

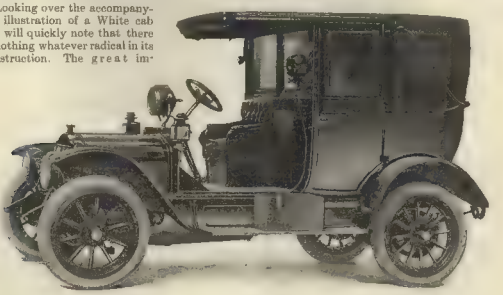
Bodies.

The Wichita Falls chassis will be fitted with any type of body to meet purchaser's requirements. Loading space in the small car is 68 x 47 x 78 in., large car stake body platform is 72 x 102 in. Price of the 1200 lb. chassis is $1450, 2000 lb. chassis $1750, f. o. b., Wichita Falls, Tex.

THE WHITE COMPANY NOW MAKING TAXICABS

The White Company, of Cleveland, O., after a most thorough investigation of the requirements in the construction of a taxicab which would give the taxicab operating companies the maximum life and mileage on a minimum upkeep expense, has developed a cab that is nearly doubling the net profits of two large companies who have installed them, it is said.

Looking over the accompanying illustration of a White cab one will quickly note that there is nothing whatever radical in its construction. The great improvement lies in its motor, front and rear axles, frame construction, distribution weight and accessibility.



New White Taxicab.

Motor 3⅝ x 5½ in., with heated intake manifold. Wheel base 110 in., tread 56, clearance 9½ in. Weight complete, 2900 lbs. The panels of the body are of metal, and removable separately, facilitating body repairs.

Some of the important points to which special attention should be given include the tire equipment. The tires are 34 x 4½ in. on all wheels, which are fitted with quick detachable, demountable rims, permitting quick changes on the road.

The motor is of the long stroke type, having 3¾ in. bore and 5½ in. stroke and is identical with that used in the White 1500 lb. wagon, the one and a half and three ton trucks. The cylinders are cast en bloc with all valves enclosed, operating on one side by one cam shaft. The intake manifold, which is heated, the exhaust manifold which is cooled and the water manifold are all cast integrally with the motor, thus eliminating many joints and simplifying the construction, as well as doing away with breakable and trouble giving parts.

The panels of the body are metal and removable separately, so that in the event of any part of the body being damaged, while in service, it is not necessary to lay up the cab for any length of time to make repairs.

The standard wheel base is 110 in. However, any length will be furnished without additional charge. The tread is standard at 56 in. Clearance is 9½ in. The total weight of the cab, completely equipped, is approximately 2900 lbs., and this is so evenly distributed that the wear and tear of the tires, as well as skidding, is reduced to a minimum.

The November number of the Cycle and Automobile Trade Journal will be the Special Commercial Car Number. Don't miss it!

The Brooks Laundry Company, of Oak Park, Ill., which is a part of the largest laundry concern in the United States, after spending more than a year in an exhaustive investigation of a power wagon for commercial uses, will discard its horse equipment. It purchased one Mercury light delivery truck and after giving it a thorough try-out, it placed a repeat order for eleven additional cars.

The Handy Wagon

By William J. Johnson

In the manufacture of pleasure and commercial cars there is one individual to whom the makers are wont to cater, and that is the farmer. Obviously if the West is to be considered, the vehicle for this individual's use must be something a little out of the ordinary. Then too, the price must be right and the construction simple throughout.

The Auburn Motor Chassis Company, of Auburn, Ind., has considered the subject from every angle and the result is the Handy Wagon, so called for the reason that it may be used by the owner as a runabout, as a family carryall for the week-end church going, or it can be used as a business vehicle in hauling produce to market. The price of this little vehicle is $487.50 with solid rubber tire equipment, though pneumatics may be had at an additional cost. It is distinctly a mail order proposition built as good as the makers know how to sell at a price that is sure to appeal, and the car is guaranteed to give satisfaction. A double opposed cylinder motor is placed under the body quite accessible, a planetary transmission and double side chain drive. The construction is such that it can easily be mastered by the non-technical owner.

Fig. 1. Handy wagon in service of farmer, with vehicle loaded for the market. Price $487.50.

Air Cooled Motor.

The engine is air cooled, cylinders offset and heads cast separate, the latter formed with integral inlet and exhaust passages and rocker arm supports.

The bore is 4⅛ in., stroke 3¾ in. The engine is secured to cross members of the frame through four ½ in. steel bolts and is so placed that it is easy to get at to make adjustments. The cylinders are carefully finished to insure satisfactory performance. The valves are nickel steel, bevel seated, placed side by side in the head and worked through rocker arms supported in the integral cylinder head brackets. The rocker arms are actuated through steel adjustable push rods which in turn are brought into play through the mushroom type steel lifters bearing in bronze guides secured to the crank case. Since the valves are in the heads, held in place on the cylinders through four 7-16 in. steel bolts, reaching them, when needed, is an easy matter.

The cam shaft which is fitted with plain bearings is an alloy steel member designed for long and hard service, and is easily removed.

The connecting rods are drop forged steel fitted with phosphor bronze bushings at the wrist pin ends, Parson's white brass bearings being used on the crank pin ends. Liners or shims are used to make adjustments. The pistons are cast of the same material used for the cylinders and are fitted with three compression rings placed above the hollow hardened and ground wrist pin, which is held in place with steel studs and wire.

The crank shaft, ground on the bearing surfaces is a drop forged steel member designed for long and hard service. This is formed with an integral flange to which the 12 in. fly wheel is retained. This carbon

steel member is provided with Parson's white brass bearings. The crank case is cast iron formed in two sections. The timing gears are fully enclosed at the top of the case.

Transmission.

A two-speed planetary transmission is fitted, this being provided with a hardened steel cone, the clutch fingers operated

Fig. 2. Motor of the Handy wagon, two-cylinder opposed air-cooled unit, bore 4½ in., stroke 3¾ in. Engine is bolted to cross member of frame through four steel studs. Fly wheel is fan spoked.

through a hand side lever, being hardened and so treated as to insure long life. Since all gears are constantly in mesh, the operation of the car is somewhat simplified for the beginner has no gears to shift. The high speed and reverse are made with the hand lever, the slow speed and brake with the foot pedal.

The drive from the transmission to the jack shaft is through a single chain, the differential being of the bevel gear type fully enclosed and operating in oil. The differential runs in long phosphor bronze boxes, the housing being cast steel, jack shaft housing supported in brackets on the frame side. Gears are made of specially selected steel and have large bearing surfaces with phosphor bronze. The drive from the jack shaft to the rear wheels is through side chains and drop forged steel sprockets, the forward members keyed and pinned to the jack shaft. The rear sprocket drums are clipped to the wheel spokes. The transmission shaft is supported in brackets on the frame sides.

Springs.

The front spring is full elliptic, transversely placed and clipped to the top member of the frame, the bottom section being secured to the front axle. There are five leaves 1⅛ in. wide, 35 in. long, and rear members also full elliptic five leaves 1½ in. wide, 36 in. long.

The wheels are wood, of the Sarven type which provides a long and free bearing. The wheel diameter is 34 in. and tires are 1⅜ in. solid rubber. The axles are forged steel, 1¼ in. section, the front being formed with integral steering yokes. The wheel pivots are drop forged.

Brakes.

There are two sets of brakes, one on the rear wheels, the other in the transmission. The rear wheel brakes are internal expanding type. The brake rocker shaft is ⅝ in. in diameter.

To strengthen the frame and running gear, radius rods are fitted, these to propel the car and extending from the rear axle to the jack shaft housing, at which point there is provision for adjustment. There are also diagonal brace rods for the rear axle.

Frame.

The frame proper of the Handy Wagon is of angle steel and to this the motor, transmission and jack shaft with differential are fastened. The vehicle in general reflects horse wagon construction in that the

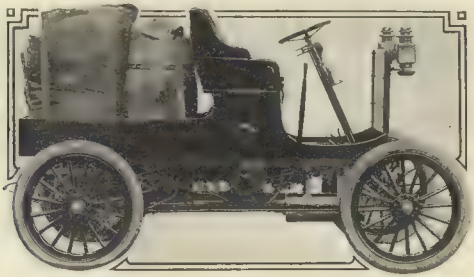


Fig. 3 Handy wagon as a utility vehicle fitted with pneumatic tires.

long wood and steel reaches spread from the rear to the front axles. The forward axle is also covered with a wood sill clipped in position. The wheel base is 77 in. and tread 56 in. The frame, which is trussed and hot riveted, is 2 x 2¼ in. section, 2 ft. 8 in. wide and 6 ft. 3 in. long. The clearance is 1 ft. 2 in.

A simple system of steering is provided, this being a malleable iron bevel with a small pinion directly connected to the 1⅜ in diameter steering post, which is fitted with a 14 in. hand wheel. The steering rods are ⅝ in. in diameter. The spark and throttle finger levers are placed under the steering wheel.

A Breeze carburetor is fitted, this being secured to a wrought iron manifold on the left side of the engine, so designed as to provide uniform supply of mixture for each cylinder. This manifold is 1 5-16 in. in diameter. Each cylinder is provided with an individual muffler.

Cooling as before mentioned is by air, the fan fly wheel drawing the cooling currents of air over the motor.

Lubrication is from a mechanical oiler driven from the motor, the oil delivery being in accordance with the speed of the engine.

A Mail Order Proposition.

The Handy Wagon is distinctly a mail order proposition and, as previously mentioned, sells for $497.50. The body fitted is such as to make the car useful for pleasure or business. The dash is straight, and on it is carried the spark coil for the ignition system which is high tension. Six dry cells are sufficient for current supply.

From 20 to 25 miles can be traveled on a gallon of fuel, the tank capacity being 6 gal. The net weight of the car is 1200 lbs.

THE MORA POWER WAGON

The Mora Power Wagon, built by The Mora Power Wagon Company, Cleveland, O., is designed and built to withstand hard usage down to the smallest detail.

The Mora is a two cylinder, 16 h. p., double chain driven wagon with a rated carrying capacity of 1500 lbs.

The Motor.

The Mora motor is water cooled, two cylinder opposed, of 4½ in. bore and the same stroke. It is placed forward under a 15 in. hood where all exterior parts are quickly accessible. The water jackets are extra large, giving ample cooling capacity and permitting the use of the thermo-syphon system of cooling. The radiator is of the square tube type and provides more radiating surface than is the usual engineering practice for motors of the same power—this, in order to obviate overheating when the motor is left running during delivery stops.

The fly wheel, with integral fan blades, is located in front of the motor and just back of the radiator. Lubrication of the motor is a combination of the splash and mechanical systems, the latter supplying oil forced-feed to the pistons and main bearings of the crank shaft. Perfect lubrication is thus assured at all times. While the splash system in itself would be sufficient, the mechanical oiler is added as a safeguard.

The ignition system consists of a low-tension magneto and coil. Both spark and throttle are controlled by levers on a sector on the steering column just below the wheel.

Mora Power Wagon fitted with stake platform body The motor has two cylinders, opposed, with 4½ in bore and stroke, developing 16 h. p The capacity is 1500 lbs and the price $1000

Zengel in National Wins Elgin Race

Zengel in National Crossing the Tape in the Elgin Race.

Another of the big annual road races is gone till another season. Zengel in his National won the Elgin race, covering 36 laps of the 8.5 mile course, a total of 306 miles, in 275:39.08, at an average speed of 66.22 miles per hour.

After him came Grant in the Alco, which covered the distance in 281:58.72. Third was Hugh Hughes in a Mercer, time 282:-09.97. The race was then called, with Frank Lee running in the thirty-second lap, 271 miles, time 285:45.

All this happened Saturday, the 26th of August.

Unfortunately, all the excitement was not in the race itself, two accidents marring the occasion. First, the grandstand, or rather a section of it, collapsed. It had been hastily and weakly erected after having served in the Chicago aviation meet. The strain when the crowd rose as the first car around appeared down the course was too great and the stand collapsed. Several people suffered broken legs, but no one was seriously injured. The race was immediately stopped

This was a wise move, and few of the drivers objected. In the great confusion no doubt more serious accidents would have occurred had the racers been allowed to proceed. After an hour the excitement subsided, the injured were removed, the spectators gotten all safely disposed, and the race was re-started.

From the start of the race Mulford looked as if he would repeat last year's performance by winning. He opened up wide and ripped off laps at 70 m. p. h. until he had done seven, when a burned-out connecting rod bearing put him out. However, he got $200 from the Stromberg people for the fastest lap, covering the course in 7:13, or 70.45 m. p. h.

Other cars had trouble before this. Aitken in his National stopped in his third lap with a cracked cylinder; De Palma broke his flywheel and came coasting to the pits in the same lap; his team mate, Wishart, was running second when a connecting rod bearing turned. In the twentieth lap Hartman's Alco developed a leaky gasoline line.

Buck in the Pope was having a lot of tire trouble. He made great speed, but continual stops for tires kept him out of the running While on one of these bursts of speed on the back stretch, the right front tire went, and the car turned completely over, landing on its wheels again. Jacobs, the mechanic, was instantly killed and Buck so badly injured that he died that afternoon.

Zengel, Grant and Hughes fought it out meanwhile. For a while Grant tagged Zengel pretty closely, but could not catch up. Zengel simply went after the race from the start, and after Mulford quit in the seventh was on top. He never stopped until the twenty-first lap, when he took on gas and water. Grant followed suit and then they were at it again until the thirty-first lap, when Zengel stopped for a little gasoline. Hughes never stopped at the pits, and only

After the grand stand collapsed

At the start of the Elgin National Trophy Race. Zengel, who won, is No. 2.

stopped once along the course, changing a tire in a few seconds

That was the way the money went: Zengel, Grant, Hughes.

Bonuses added considerably to the winnings of the drivers, $2,175 being distributed by the accessory concerns, in addition to the $2,500 purse given by the Elgin association. Zengel received $1,000 for winning the Elgin National, $250 from Splitdorf, and $250 from Michelin, making his earnings $1,500. Grant collected $300 from Elgin, $100 from Bosch and $150 from Michelin. Hughes in this race got $200 from Elgin and $50 from Bosch. Mulford won the $200 Stromberg fastest lap prize.

Friday's Races.

The races of the first day, Friday the 25th, were not marred by serious accidents. F. E. Radina, mechanician for Raimey in the Cino entry in the Kane County race, broke his ankle

Three races were run this day. Herr in his National won the 301-450 cm. Illinois Cup race of 203.3 miles in 185:55, average speed 65.63 m. p. h. Second to him came Merz, also in a National, who ran in 186:04, average speed 65.57 m. p. h. Two Velies, under Jeffkins and Stickney, were still running when the race was called. They were in their twentieth and eighteenth laps, respectively.

EQUIPMENT OF CARS IN ELGIN RACES.

Elgin Trophy, Stock Chassis, Under 600 cu. in., 306 Miles.

Car and Driver	Tires	Rims	Magneto	Carburetor	Oil
Lozier—Mulford	Michelin	Michelin	Bosch	Rayfield	Oilzum
National—Zengel	Michelin	Michelin	Splitdorf	Schebler	Monogram
National—Aitken	Michelin	Michelin	Splitdorf	Schebler	Monogram
Alco—Grant	Michelin	Michelin	Bosch	Automatic	Monogram
Alco—Lee	Michelin	Michelin	Bosch	Automatic	Monogram
Alco -Hartman	Michelin	Michelin	Bosch	Automatic	Monogram
Simplex—De Palma	Michelin	Michelin	Bosch	Simplex	Monogram
Simplex—Wishart	Michelin	Michelin	Bosch	Simplex	Monogram
Pope-Hart.—Buck	Goodrich	Firestone	Bosch	Pope-Hart	Monogram
Mercer—Hughes	Michelin	Michelin	Bosch	Schebler	Monogram

Illinois Trophy, Stock Chassis, 301-450 cu. in., 203.5 Miles.

National—Herr	Michelin	Michelin	Splitdorf	Schebler	Monogram
National—Merz	Michelin	Michelin	Splitdorf	Schebler	Monogram
Velie—Jeffkins	Michelin	Michelin	Splitdorf	Stromberg	Monogram
Velie—Stickney	Michelin	Michelin	Splitdorf	Stromberg	Monogram

Kane County Trophy, Stock Chassis, 231-300 cu. in., 169.4 Miles.

Staver-Chi.—Monckmeier	Michelin	Michelin	Remy	Rayfield	Monogram
Staver-Chi.—Robillard	Michelin	Michelin	Remy	Rayfield	Monogram
Cole—Jenkins	Firestone	Firestone	Bosch	Schebler	Oilzum
Cole—Morris	Firestone	Firestone	Bosch	Schebler	Oilzum
Colby—Pearce	Michelin	Michelin	Remy	Rayfield	Polarine
Colby—Armstrong	Michelin	Michelin	Remy	Rayfield	Polarine
Colby—Ogren	Michelin	Michelin	Remy	Rayfield	Polarine
Corbin—Maisonville	Michelin	Michelin	.....	.....	Monogram
Mercer—Hughes	Michelin	Michelin	Bosch	Schebler	Monogram
Mercer—Barnes	Michelin	Michelin	Bosch	Schebler	Monogram

Aurora Cup. Stock Chassis, 161-230 cu. in., 135.57 Miles.

Abbott-Det.—Roberts	Michelin	Michelin	Bosch	Mayer	Monogram
Ford—Kulick	.....	.....	Ford	Kingston	Polarine
Abbott-Det.—Robbins	Michelin	Michelin	Bosch	Mayer	Monogram

This race developed into a duel between the two Nationals after the eighth lap, when Merz was leading. Herr in the next lap got the lead, and managed to keep it by narrow margins to the finish.

Herr pulled down the $400 purse in the Illinois and in addition was given $150 by Splitdorf and $150 by Michelin. He also won the Stromberg $100 prize for the fastest lap. Merz' only reward was $150 from Splitdorf.

The Kane County race for 231-300 cm. cars went to Hugh Hughes in the Mercer, which did the 169.5 miles in 157:21.52, at 64.61 m. p. h.

Second was Barnes, also in a Mercer, 159:55.47, average 63.56 m. p. h.

Pearce in a Colby, Jenkins in a Cole, Matsonville in a Corbin, Morris in a Cole, Monckmeier in a Staver-Chicago, finished in order named.

Hughes in a Barnes led from the first. He cashed $300 for first in the Kane County and in the way of bonuses he got $100 from Bosch, $100 from Michelin and $100 from Stromberg for the fastest lap. Barnes, second, received a $50 bonus from Bosch, and Pearce collected $50 from Remy.

In the Aurora Cup race, for 161-230 cm. cars, Roberts in his Abbott-Detroit proved the winner, doing 135.5 miles in 151:11.32, average 53.80 m. p. h. Second came Kulick in a Ford, time 159:11.53, average 51.09 m. p. h., and third was Robbins in an Abbott-Detroit, 166:56.52, average 48.72 m. p. h.

Roberts won $300 for first, and in addition received $100 from Bosch, $75 from Michelin and $100 from Stromberg for the fastest lap.

Two New World's Records Made at Brighton Beach

Burman in Opel passing Hughes in Mercer.

New world's records for the 1 and 2 mile distances on circular dirt tracks were made during the race meet at Brighton Beach, Sept. 2 and 4. On Saturday, Burman, in the Blitzen Benz clipped about three seconds from the two-mile record, covering the distance in 1:37.89. Monday Burman took 1-10 second off the mile mark, going around in 48.62.

Big crowds turned out both days, and found the track in better shape than ever before. The first day the racing was rather tame and the lack of close finishes made the occasion seem more like a parade than a race meet. One exception developed in the shape of the Remy Brassard. Here three of the Moross aggregation went after the "meal ticket" and furnished a pretty race with a close finish. Considerable excitement prevailed for a while following the announcement that Oldfield was to drive the Mercedes, but it turned out that the versatile Barney was not the one meant.

Monday, however, brought a full share of excitement. Close finishes were the order. In fact, it looked at times suspiciously like an order, for the winners usually were kind enough to wait for those behind to almost catch up. Almost, but not quite. Be that as it may, they were some finishes, all right.

In the first event, of five miles, the cars bunched, with the E-M-F back in third place. In the last mile Tower opened up and nosed out the pacemaker.

After Burman broke the mile record, the Mercer and the Schacht set out to fight for five miles. The two alternated in the lead, the Mercer finally getting to the wire first.

The third race, also for five miles, brought forth the Opel, which won from the Benz and National.

Four cars, the Opel, National, Mercer and Mercedes, came to the tape for the ten mile race. The Opel made the pace from the start, and kept the lead to the end, in spite of Wishart's speedy and thrilling bursts of

speed in the Mercedes. Mercer landed third, the National going out with a bad tire in the first mile.

The Mercer captured the fifty mile race, the Mercedes having the tire trouble this time. The fight between the two was exciting and brought the crowd to its feet several times

The last race of the day, the free-for-all handicap, brought forth what narrowly escaped being a tragedy. Wishart in his Mercedes was leading in the midst of a big field when one of his tires went. The car shot across the track and through the fence, overturning in the ditch. Wishart leaped out safely.

The ambulance got on the job immediately, and galloped around the track, with the racers rushing past, to the scene of the accident. It got there safely, strange to say. The summaries:

FIRST DAY.

Five Miles, for Cars of 161-230 Cu. In.

Car and Driver	Position	Time
E-M-F—Tower	1	5:55.36
Paige-Detroit—Craig	2	
Penn "30"—Ainslie	3	
Jackson—McBride	4	
Lancia—Ferguson	5	

Five Miles, for Cars of 231-300 Cu. In.

Mercer—Hughes	1	6:32.56
Correja—Foster	2	
Schacht—Gray	3	

Five Miles, for Cars of 301-450 Cu. In.

National—Sheets	1	4:51.80
Benz—Disbrow	2	
Jackson Cobe	3	
Jackson—Regan	4	

Two Mile Time Trial Against Mark of 1:40:55 World's Record.

Benz—Burman		1.37 89

Five Miles, for Cars Under 600 Cu. In.

National Sheets	1	6:27.67
Jackson—Cobe	2	

Three Miles Free-for-All, Flying Start, First Heat Remy Brassard.

Benz—Burman	1	2:57.04
Mercedes—Disbrow	2	
Hotchkiss—Kilpatrick	3	

Fifty Miles, for Cars Under 600 Cu. In. for W. B. Trophy.

Opel—Burman	1	50:07.13
Mercer—Hughes	2	
Jackson—Cobe		
National—Sheets		

Five Mile Handicap.

Benz (scratch)—Burman	1	5-25 25
Mercer—Hughes	2	
E-M-F—Tower	3	

Correja, Hotchkiss, Paige, Lancia, National, Regal, Jackson and Opel also ran.

SECOND DAY.

Five Miles, for Cars of 161-230 Cu. In.

No.	Car and Driver	Position	Time
16	E-M-F—Tower	1	5:45.13
9	Paige-Detroit Craig	2	
11	Penn "30"—Ainslie	3	
13	Lancia—Ferguson	4	

Mile Time Trial Against World's Record of 48.72

1	Benz—Burman	48'62

Five Miles, for Cars of 231-300 Cu. In.

22	Mercer—Hughes	5:35.10
17	Schacht—Gray	2

Five Miles, for Cars of 301-450 Cu. In.

14	Opel—Burman	5:03 96
40	Benz—Oldfield	2
20	National—Sheets	3

Final Heat Remy Brassard, Three Miles.

4	Benz—Burman	2:50.90
3	Mercedes—Oldfield	2
8	Hotchkiss Kilpatrick	3

Ten Miles, for Cars Under 600 Cu. In.

14	Opel—Burman	9:43.30
11	Mercedes—Wishart	2
22	Mercer—Hughes	3
20	National—Sheets	

Five Miles Free-for-All Handicap.

22	Mercer—Hughes	5:14 31
16	E-M-F—Tower	2
20	National—Sheets	3

Paige, Penn, Lancia, Hotchkiss, Mercedes, Regal and Benz also ran.

Fifty Miles, for Cars Under 600 Cu. In.

22	Mercer—Hughes	49:56 06
11	Mercedes—Wishart	2
20	National—Burman	3
14	Opel—Burman	

HAD TO FIX THE TRACK FOR THIS RACE

An A. A. A. official with some proper ideas and the spunk and determination to carry them out turned up on Sept. 2nd at Amarillo, Tex., in the shape of R. W. Carr

The occasion was a two days' meet at Glenwood Park, under the auspices of the Panhandle Auto Fair Association. The track had been recently constructed, and when the day of the race came was covered with snow to or three inches of dust.

Carr saw, also ate some of the dust, and got enough grit to refuse to allow the races to be run. Despite the angry protests of the crowd, officials and some of the drivers, he stuck to it.

The spectators got their money back, and the course was then rolled and oiled to the extent of three carloads of John D. fluid. The result was an excellent track, and the joy of the races on Monday and Tuesday more than offset the gloom of the raceless Saturday.

The track was smooth, clean and fast, and the long races developed much excitement Reeves, who alternated in an E-M-F and a National, proved the daredevil of the occasion, and gave the crowd a thrill when the latter car was wrecked by a burst tire.

The summaries:

Monday, September 4.

Twenty miles, free-for-all—Won by Reeves, E-M-F; second, Day, Marion; third, Trippler, Buick. Time, 20 15.

Thirty miles, free-for-all—Won by Monckmeier, Staver-Chicago; second, Nikrent, Staver-Chicago; third, Reeves, E-M-F. Time, 29:06.

Two miles, for track record—Won by Wilcox, National; second, Johnson, Marmon; third, Reeves, National. Time, 1:45.2.

Fifty miles, free-for-all—Won by Reeves, National; second, Wilcox, National. Time, 44:37.

Tuesday, September 5.

Thirty miles, free-for all—Won by Nikrent, Staver-Chicago; second, Monckmeier, Staver-Chicago; third, Johnson, E-M-F. Time, 28:27.

Sixteen miles, free-for-all—Won by Johnson, E-M-F; second, Trippler, Buick. Time, 15:15.

Two-mile time trial—Wilcox, National, 1:41.

Hundred miles, free-for-all—Won by Wilcox, National; second, Monckmeier, Staver-Chicago; third, Mullins, Cadillac. Time 96:53.

Fifty miles, free-for-all—Won by Wilcox, National; second, Johnson, Marmon. Reeves, National, wrecked. Time, 46:59.

Announcement of the

United States Tire Company

CONTINENTAL G&J HARTFORD M&W

What it is and how it is to benefit every dealer, user and manufacturer of motor cars in America

A BRIEF STATEMENT OF THE FACTS

FOUR of the most prominent tire makers in the country have joined hands, forming the largest and best equipped tire company now in existence—the United States Tire Company.

Beginning March first, this new organization, composed of the Continental Caoutchouc Company of New York, the G & J Tire Company of Indianapolis, Ind., the Hartford Rubber Works Company of Hartford, and Morgan & Wright of Detroit, will handle the products of the four named companies.

The four factories and the four brand names will remain the same. The dealers' relations with the four companies will remain practically as before. The change will be in the improvement of tire quality, made possible by uniting the manufacturing methods, secrets and experience of the world's best known tire makers, and the distinct advantage, from both the manufacturers' and dealers' standpoint, of five plants distributed throughout the country.

Announcement Page 2

The United States Tire Company's Message to Dealers

IT is fortunate both from our standpoint and from that of the trade that this new company is composed entirely of the men who have for years handled the affairs of the four individual companies. No dealer who has ever dealt with any one of the four separate companies will need an introduction to the new organization.

The pronounced friendliness of the trade towards these companies developed through years of mutual fair dealing is an extremely valuable asset and one we highly prize.

With two or three exceptions the trade relations with the new company will remain the same as heretofore. All four brands of products will remain the same except that a combination of the facilities and secret processes of manufacturing, heretofore possessed individually by each company, will now be utilized in making all United States tires. These advantages will naturally result in an increased demand for all United States products, to the direct profit of every dealer who handles them.

Three district branches have been established. One in New York for the Eastern district, one in Chicago for the Central district and a third in San Francisco for the Western district. Through these three district offices all the business of the company will be transacted.

The distributing facilities of the new organization are unapproached by any other company in existence. In addition to five immense factories, direct factory branches and agencies are established in every large city of the country.

This organization, complete to the last detail in both the manufacturing and distributing departments, will work for closer and more profitable relations between ourselves and the trade than would ever be possible with a single company's manufacturing and distributing facilities.

Announcement Page 3

How the formation of the United States Tire Company will benefit the motorist

EVERY logical minded tire user will readily admit that, given an equally high grade of fabric and crude rubber, tire quality and tire mileage is directly proportionate to the amount of brains and experience put into tire making. Laying aside the advantages our immense purchasing power will give—enabling us to command the choice of the world's finest rubbers and fabrics;

Laying aside the manufacturing improvements and economies that will result from enormous production (our four plants will turn out nearly three-quarters of a million tires during the coming year);

Even granting, for the sake of argument, to smaller separate concerns equality in these respects, this fact will still strike every fair minded buyer of tires with convincing force—United States tires are the product not of a single company's comparatively limited facilities and experience, but they are the product of the combined brains, manufacturing secrets and long experience of four of the world's best known tire makers. They unite the best features of the tires made by all four companies.

This combining of the most highly prized and carefully guarded secrets of the rubber industry to-day will produce a tire that will give the greatest mileage that it is possible to obtain from a combination of rubber and fabric.

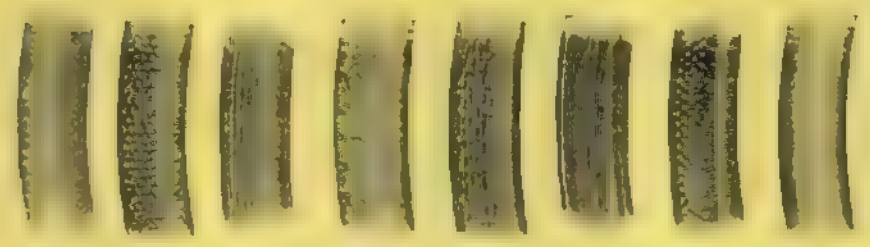
All four tires will be sold under the old brand names. Buy any one you favor. As long as it is a United States tire you will get more tire value for your money than you possibly could from a company with comparatively limited facilities and with only a single company's knowledge of the best methods of tire manufacturing.

The combined selling equipment of the four companies will be at the service of United States tire users. Five factories, branches, agencies in every large city of the country and over four thousand distributors will look after their wants. No matter where, when, or what your tire need, a United States dealer can supply it.

Announcement Page 4

United States Tires

The most complete line of types and treads ever offered for the motorist's selection



PLAIN | BAILEY | MIDGLEY | NOBBY | TRAXION | TYPE COURSE | STEEL STUD | SPECIAL ELECTRIC

Select any style you fancy, with the assurance that the quality is *Uniformly Superior.*

The Greatest opportunity ever offered to dealers in automobile tires

OVER four thousand of the most progressive dealers in the country, now handling the four makes of tires, will on March first become United States Dealers. They will begin to reap the benefits of the country-wide advertising campaign we will inaugurate on that date. This will be the most extensive campaign ever attempted by a tire manufacturer.

Full pages in newspapers, trade papers, farm papers and magazines will, time after time, carry the message of United States tires and United States dealers to every car owner between the coasts.

We present an opportunity to every big dealer in the country—big not necessarily in business or capital, but large in ability to do big things. We want more of such dealers to help handle the increased demand for United States tires in localities where we are not now adequately represented.

If you are prepared to join us, let us know who you are and where you are, on the attached coupon.

United States Tire Company
Broadway and 58th St., New York

United States Tire Company
New York

Gentlemen:—Kindly send me your complete dealers' proposition.

Name _____

Address _____

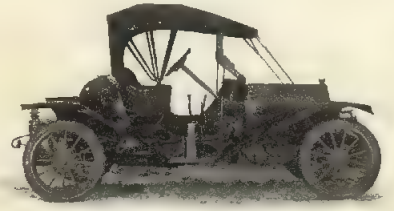
The Henry

BUILT TO SELL

Five-Passenger Touring Car—Model "M." $1750. 40 H. P.

This is the car that made the perfect Road Score in the Chicago Motor Club's 100-Mile Reliability Tour, November 7th to 11th, inclusive 200 miles or more, daily for five days, over all kinds of roads, from Chicago to Moline, to Quincy, to Peoria, to Champagne, to Chicago.

The HENRY 40 was the most economical in fuel consumption of all touring cars, finishing with perfect road score.



Roadstar—Model "K." $900. 25 H. P.

This car is of ample size and horsepower, and is a REAL AUTOMOBILE—not a toy. Do not misjudge it by the price, for it compares favorably with other cars of its type, selling for $1500 or more.

HENRY MOTOR CAR

1507 MICHIGAN AVENUE

40 for 1911

ON ITS MERIT

The HENRY LINE for 1911 is one of the most complete showings of touring cars and roadsters, and meets the requirements of those motorists who may have preferences for different body types.

It, therefore, is a line which will enable the agent to meet every demand, and will please the autoist because he can obtain exactly what he desires.

The HENRY CAR is a tried and proven proposition,—it does not embody extreme features for the sake of originality. It has been built to sell on its merits, and is making a host of friends daily for that very reason.

ROADABILITY is our first consideration, for we are determined that the HENRY "40" shall always be known as a RELIABLE CAR.

If you are looking for an automobile which represents full value, one which will give you satisfactory service,—is handsome in appearance, and is made RIGHT, you should look no further!

We would be pleased to send you a copy of our catalog,—it is yours for the asking.

Four-Passenger, Demi-Tonneau, Model "B"—$1750; 40 H. P.

Enclosed Roadster, Model "E"—$1800, 40 H.P.

Roadster, Model "P"—$1750; 40 H. P.

Five-Passenger, Foredoor Touring Car, Model "F"—$1800; 40 H. P.

Fore-door, Demi-Tonneau, Model "H"—$1800, 40 H. P.

Roadster DeLuxe, Three-Passenger, Model "X"—$2200 equipped; 40 H. P.

SALES COMPANY

CHICAGO, ILLINOIS

The Inter-State is a Factory Founded on Honest Values

$1750 40 H. P. **Inter-State** **$2000 40 H. P.**

$2700—50 H. P.

We are enabled to give the maximum value possible to buy in Inter-State cars because our facilities are thoroughly modern. We have no bonds to meet—no indebtedness to carry. Our plant is modernized in every detail. Our capital is abundant; our management thoroughly in touch with the latest requirements in the automobile world. Inter-State cars are up to the latest and best ideas of motor car practice. We have nothing obsolete to offer.

We have simply progressed in our quiet way—no fireworks—no noise—testing carefully and slowly each car that leaves our factory. Too much haste would harm our cars would react upon us. In some localities the Inter-State predominates—more Inter-States than there are any two makes of cars. In other places the Inter-State is less extensively known for the simple reason that we have not had enough cars to develop and supply those particular fields. The popularity of our Big-Value-and-Sane-Price idea has demanded

Four More Acres of Factory Floor Space

We want progressive, Responsible and Established Dealers to represent us in unassigned territory. Send for our attractive dealer's offer.

INTER-STATE AUTOMOBILE COMPANY

Licensed under Selden patent

Muncie, : : : : Indiana

This advertisement was written exactly as we would talk to you about

THE SELDEN CAR

MADE BY THE FATHER OF THEM ALL

It is just a heart-to-heart talk calculated to appeal to your common sense. It contains a message of vital importance, whether or not you contemplate the immediate purchase of an automobile or the taking up of an agency. We're not going to burden you with technical points or high-sounding phrases.

We ask only this: Read this ad., and then before you decide on a car, see the Selden.

The Selden car is generous in size and power, and stands on its own record for constant month-in-and-month-out, troubleless, satisfying service. It is the natural perfected development of that first car which George B. Selden, inventor of the gasoline automobile, spent 25 years in developing.

Of course you know that every automobile in the world is but an adoption of the Selden idea. Selden invented the automobile. That is the explanation of "Licensed under Selden Patent." Naturally Selden knows more about building automobiles than others that are simply following out his principle.

When we tell you there is no machine like the Selden, the car itself proves it. If a better machine could be built, we would build it. There is nothing complicated about the car—it is easily mastered.

You don't want greater speed than the Selden develops—60 miles an hour, without straining. But it takes a speed indicator to know that the car is going that fast. You would never know it because of its easy running and riding.

Our new 1911 models carry out the torpedo and straight-line effects most pleasingly. These models are low, have drop frames, 125-inch wheel base, large wheels, three-quarter elliptic springs, and the desired foredoors and inside control.

Our 1911 line includes a variety of bodies and three distinct types of chassis, from $2,250 to $2,600, with complete touring equipment, including top, complete with all curtains and slip cover, wind-shield, two gas head-lights, Prest-O-Lite tank, two oil side lights, one oil rear light, battery box on running board, horn, robe rail, muffler cut-out operated by foot, tire irons, complete set of tools and one extra rim.

See the Selden exhibit at space 105, Madison Square Garden. We'll give you an introduction to "The Father of Them All" talk technical points if you wish—and send you away feeling happy, whether you buy or not.

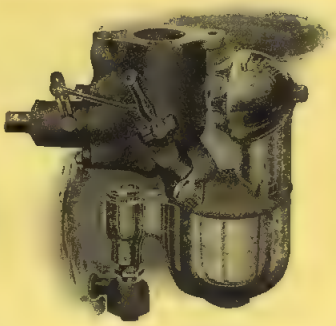
SELDEN MOTOR VEHICLE CO.

Licensed under Selden Patent

ROCHESTER, :: NEW YORK

MARVEL CARBURETER
THE NAME DEFINES IT

"It's a Marvel"



That is what the salesman of an automobile will tell you if he wants to give the best in carbureters.

See that your 1911 car is equipped with the never-freeze carbureter.

In just 30 days of cold weather the Marvel principle has been proven correct.

HEAT and a POSITIVE HEAT and THAT HEAT under CONTROL, is what your carbureter must have to run well in cold weather with the low grade-gasoline. The Marvel takes its heat out of the exhaust and runs it through a heat jacket with a large copper tube. The amount of heat is controlled by the throttle.

MARVEL CARBURETERS run as well in the WINTER as in the SUMMER and THAT IS WHY the MARVEL HAS MADE GOOD.

Special Types for Hupmobiles, Fords and Buick 10's.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

MARVEL CARBURETER
THE NAME DEFINES IT

The Marvel is far in advance of the times

The Manufacturers of the Marvel knew that the low-grade gasoline would be difficult to vaporize in cold weather. Therefore, they designed the Model "H" Marvel with a LARGE HEATING jacket to meet this contingency.

Heretofore, carbureters have been heated by water from the engine or from exhaust gases taken through a SMALL copper tube.

The exhaust gases, passing through a small tube cool, before they do the work intended for them.

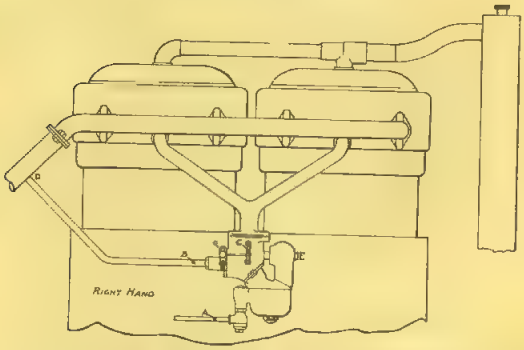
We realize that the heat had to be positive and quick in its action. We then experimented to find this phase. The result was Model "H" Marvel.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

MARVEL CARBURETER
THE NAME DEFINES IT

The Marvel Method of Heating



The exhaust gas from the Manifold is positive and quick.

The gas is taken through a $\frac{9}{16}$" copper tube at "D" and connected to the carbureter at "B" and taken out at "E." Gas taken through such a large tube must be controlled.

On the Marvel this is controlled at "F" and connected to the throttle "C."

Investigate the Marvel.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

MARVEL CARBURETER
THE NAME DEFINES IT

The Most Dependable Carbureter

Right now, during the cold weather, the Marvel Carbureters are giving perfect satisfaction.

Forty degrees' change in temperature does not affect the carbureter.

You don't have to adjust it every morning, because the MARVEL METHOD OF CONTROLLED HEAT establishes a UNIFORM CONDITION at the MANIFOLD in ANY kind of weather.

What the Marvel Means to You

It will not load up at any range of speed.

It will throttle down at any time of the year.

It will give more mileage per gallon of gasoline.

It is always DEPENDABLE and will NEVER FREEZE.

It carries a guarantee that it will give satisfaction or the purchase price refunded.

MORE POWER—MORE FLEXIBILITY—MORE ECONOMY.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

Steam Pleasure Cars

Lane Steam Cars.

Made by the Lane Motor Vehicle Co., Poughkeepsie, N. Y.

MODEL 25 TOURING CAR $1,600

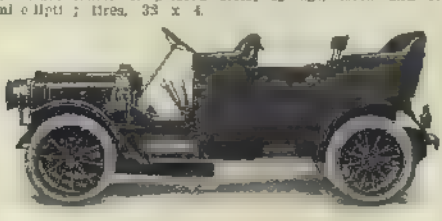
Motor, 30 h. p., cylinders compound engine 3½ x 5½ bore, stroke 5½; cooling by condenser, Lane burner, automatic fuel regulation, direct drive from engine to rear shaft, two sets of brakes on rear hubs and differentia. springs semi elliptic front and rear, tires 35 x 4 front and rear, wheel base 110 in

White Steam Cars.

Made by the White Company, of Cleveland, Ohio.

WHITE MODEL OO, $2,000.

Five passenger touring car body. Motor rated at 30 h. p.; two cylinders, bore 2⅞ and 4¼ respectively, stroke 5 in. The motor is of the compound condensing type, the generator is of the White flash type, located in the middle; the burner adapted for either gasoline or kerosene; drive is by shaft, two sets of brakes on the rear wheels steering wheel is at the right; gasoline capacity 23¾ gal., in two tanks, one on each side; frame of pressed steel; springs, front and rear semi elliptic; tires, 33 x 4.



WHITE MODEL MM, $4,000.

Five passenger touring car body. Motor, 40 h. p.; two cylinders, vertical, located under hood, of the compound condensing type, bores 3 and 5½ respectively; stroke 4½, fuel and water regulations automatic, tires, 36 x 4 front, 36 x 5 rear. Equipment of lamps, generator, Prest-O-Lite tank, horn, robe and foot rails. Other chassis details are the same as Model OO

Stanley Steam Cars.

Made by the Stanley Motor Carriage Co., Newton, Mass.

STANLEY MODEL 70 TOURING CAR, $1,500

Five passenger touring car. Motor, 20 h. p., of the simple non-condensing type; two cylinders, 4 x 5, horizontal, geared to axle; boiler of Stanley tube pipe, located under hood; 23 in. burner, Stanley type; fuel automatically regulated, water regulated by hand by-pass, throttle is located directly under the steering wheel tires 36 x 4, front and rear; springs, full-elliptic, front and rear; frame of wood, gasoline tank 15 gal., at the rear. Equipment lamps. Prest-O Lite tank and tools.

STANLEY MODEL 71 TOY TONNEAU, $1,400.

Four passenger toy tonneau, upon the same chassis as Model 70.

STANLEY MODEL 62 RUNABOUT, $1,000

Two passenger runabout. Motor, 10 h. p.; two cylinders, 3¼ x 4½; tires 32 x 3½. Other chassis details are the same as Model 70.

Every Automobile Dealer and Garage Man

SHOULD READ THE

CYCLE AND AUTOMOBILE TRADE JOURNAL

regularly. It contains valuable information each issue. New cars and new parts and accessories, new appliances and conveniences. Important trade events and the announcements of all the leading houses in the trade. Send for our special proposition to dealers, garages and repair shops.

CYCLE AND AUTOMOBILE TRADE JOURNAL Philadelphia, Pa.

Public Service Cars

American Electric Public Service Cars.

Made by the American Motor Truck Co., Lockport, N. Y.

AMERICAN MODEL A.

Thirty passenger sight-seeing car. Two Westinghouse motors, located one in front of each rear wheel suspended from the frame; capacity for 25 per cent. overload; 42 cell National battery; weight 1,800 lbs.; rated, 80 volts, 30 to 32 amperes, Westinghouse controller, giving four speeds forward and reverse, drive by chains two sets of brakes expanding and contracting on the counter shaft and rear wheels; front tires solid 36 x 5, rear twin solid, 36 x 4; steering wheel at the right; frame of armored wood; front springs, half platform, rear springs, full platform; wheel base 180 in. Equipment of lamps, bell, tools, speedometer and ammeter.

Atlas Gasoline Public Service Cars.

Made by the Atlas Motor Car Co., Springfield, Mass.

ATLAS MODEL K, TAXICAB, $2,400.

Five passenger taxicab body. Motor 20 h. p., two cycle water cooled, two cylinders, 4½ x 4¼, cast in pairs, offset ⅝ in.; crank shaft bearings, Atlas roller; power plant demountable; ignition by Atwater-Kent system; disc clutch sliding selective three speed transmission integral with engine; drive by shaft; direct on high; two sets of brakes expanding and contracting on the rear wheels and transmission, tires, pneumatic, 32 x 4 front and rear, on Q. D. rims steering wheel at the left; gasoline tank under seat, wheel base 110 in., frame of pressed steel; front springs, semi-elliptic; rear, ¾ elliptic. Equipment of lamps and tools.

Public Service Gasoline Vehicles.

Made by Luftwieler Pumping Engine Co., Los Angeles, Cal.

LUFTWIELER FIRE ENGINE.

Luftwieler Fire Engine. Motor 60 h. p., four cylinders 6 x 6½, selective sliding transmission, 3 speeds forward direct drive on third, wheels 38 x 4, solid rubber tires; wheel base 130 in., fire pumps operated through transmission, B variety of [illegible] 2½ in hose capable of carrying 12 men, [illegible] tools.

Great Eagle Gasoline Public Service Cars.

Made by The United States Carriage Co., Columbus, Ohio.

1224 AMBULANCE, $3,500.

Capacity, 1 driver, 3 attendants and patient; weight, 3,500 pounds, wheel base 132 in., tread, 56 in. Motor, 4 cylinders cast singly, 4½ in. x 5 in., 50 h. p.; water cooled with integral water jackets and honeycomb radiator. Hess-Bright bearings on crank shaft; diameter of valves, 2⅜ in., valves all on left side. Engine mounted on rubber [illegible] ump spark ignition, two sets of spark plugs; one set battery, four dry cells; Stromberg carburetor attached by [illegible] left side of motor, tank under seat [illegible] clutch, operated by foot; drive by shaft, [illegible] arms provided, sliding selective transmission in the middle operated by hand giving three speeds direct on third; ball bearings used. I-beam front axle, floating rear axle, two sets of brakes, internal and external on rear wheels, lined with thermoid brakes operated by foot and hand front and rear tires pneumatic, 36 in. x 4½ in., on Q. D. rims wheel bearings roller. Worm and wheel steering gear tie link at the rear of front axle, steering wheel at the right, spark and throttle levers above at the right, frame of pressed steel, front springs semi elliptic rear ¾ elliptic. Full equipment of lamps, horn, speedometer and gas tank.

Crane & Breed Public Service Cars.

Made by the Crane & Breed Mfg. Co., of Cincinnati, Ohio.

CRANE & BREED AMBULANCE, $2,500.

Price is for chassis alone. Various public service bodies may be fitted. Motor, 40 h. p., water cooled, four cylinders, 4½ x 4¾, cast in pairs, offset ⅝ in.; power plant demountable, ignition by magneto and storage batteries; multiple disc [illegible] three speed, roller bearing transmission in the [illegible] drive by chain; two sets of brakes, expanding and [illegible] on the rear wheels; tires, pneumatic, [illegible] Q. D. rims steering wheel at the right, [illegible] tank under seat, frame of channel steel, front springs semi elliptic; rear, platform; wheel base 141 in. Full equipment of lamps, Prest-O-Lite tank, tools and wind shield.

CRANE & BREED HEARSE, $2,900.

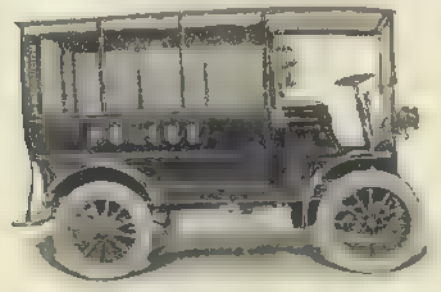
Price is for chassis, eight different styles of bodies may be fitted. Motor, 50 h. p., water cooled, four cylinders, [illegible] cast in pairs, offset ⅝ in. Other chassis details are the same as those of the ambulance.

Franklin Gasoline Public Service Cars.

Made by the Franklin Automobile Co., of Syracuse, N. Y.

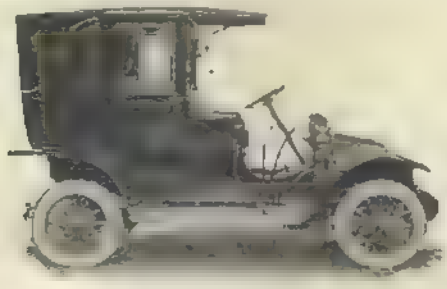
FRANKLIN OMNIBUS. $3,700.

Twelve passenger omnibus. Motor, 18 h. p., air cooled located under seat; four cylinders, 3⅝ x 6, cast singly; power plant demountable, ignition by magneto, multiple disc clutch, drive is by shaft, direct on third speed; two sets of brakes, contracting on the rear wheels and transmission; tires are pneumatic 36 x 5½, on Q. D. rims, steering wheel at the right; gasoline tank under seat; frame of wood; front springs, full elliptic, rear semi elliptic coil, wheel base 96½ in.



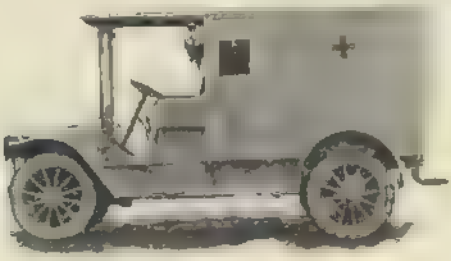
FRANKLIN PATROL. $3,500.

Twelve passenger patrol, on the same chassis as the omnibus.



FRANKLIN TAXICAB. $2,500.

Five passenger taxicab. Motor located under hood, wheel base 100 in.



FRANKLIN AMBULANCE. $3,500.

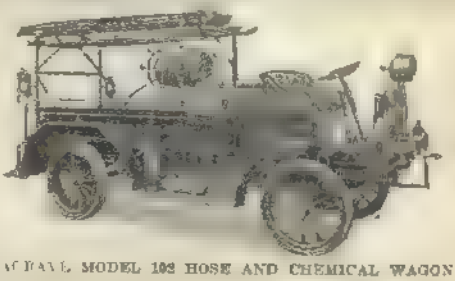
Wheel base 120 in.

Seagrave Chemical Engine.

Made by the Seagrave Company, Columbus, Ohio.

SEAGRAVE MODEL 101 CHEMICAL ENGINE.

Seating capacity, two on front seat, four on steps. Motor, 50 h. p.; four cylinders 5¾ x 6, cast separately; air cooled, jump spark ignition, dual system; sliding selective transmission, three speeds forward, direct drive on third, double chain drive from jack shaft; cone clutch faced with leather, four sets of brakes, two on jack shaft, two on rear wheels; front springs semi elliptic, rear springs platform; front tires [illegible] x 4; rear tires 5 x 3 in., solid; wheel base 128 in.



SEAGRAVE MODEL 102 HOSE AND CHEMICAL WAGON.

Seating capacity, two on seat, six on steps. Motor, 80 h. p.; six cylinders 5¾ x 6, cast separately; wheel base 140 in. Other chassis details the same as Model 101.

Mack Gasoline Public Service Cars.

Made by Mack Bros. Motor Car Co., Allentown, Pa.

MACK STAGE.

Built in sizes to carry from 10 to 35 passengers. Motor 50 h. p., water cooled; four cylinders, 5½ x 6, cast in pairs; ignition by Bosch dual system; transmission three speed selective clutch type, gears always in mesh, drive by chain; front tires, 36 x 4½ solid, rear 36 x 3½ twin solid, wheel base 152 in. Equipment of lamps, horn and tools.

Alco Gasoline Public Service Cars.

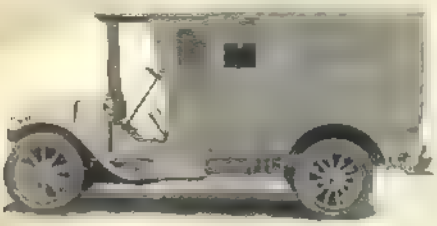
Made by the American Locomotive Co., New York City.

ALCO CAR. $3,350.

Motor, water cooled, 24.3 h. p., 4 cyl., 3 [illegible]" x 4½, cast in pairs; ignition jump spark operated by [illegible]; sliding transmission, three speeds forward, direct shaft drive on third; multiple disc clutch; two sets of brakes, located on rear wheels, tires 32 x 4 in. front and rear, steering wheel at the right, front springs semi elliptic, rear springs platform, wheel base 104 in.

Pope-Hartford Gasoline Public Service Cars.

Made by the Pope Mfg. Co., of Hartford, Conn.



POPE HARTFORD GASOLINE AMBULANCE. $5,000

Pope-Hartford chassis may be mounted for fire wagon, police patrol and ambulance bodies. Motor 50 h. p., four cycle, water cooled, four cylinders cast in pairs; ignition by magneto and storage battery; leather faced cone clutch; sliding selective four speed transmission located in the middle, direct on fourth speed, drive by shaft; two sets of brakes expanding and contracting on the rear wheels; tires front: 38 x 5½, rear 39 x 6 on demountable rims; steering wheel at the right; frame of pressed steel armored; front springs semi-elliptic, rear platform; wheel base, 136 in.

POPE HARTFORD HOOK & LADDER AND CHEMICAL ENGINE. $5,000

Motor, 50 h. p., 4 cylinders, 4 x 5, cast in pairs; jump spark ignition from magneto or storage battery, sliding selective gear, four speeds forward, direct shaft drive on fourth, cone clutch faced with leather, two sets of brakes, expanding and contracting, located on rear wheels; front tires 38 x 6½, rear 39 x 6; fitted to demountable rims, steering wheel at the right; gasoline tank under seat; pressed steel frame; front springs semi elliptic, rear full platform; wheel base 136 in.; complete equipment.

The Glover Public Service Cars.

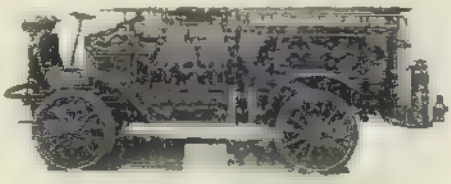
Made by Geo. S. Glover, Chicago, Ill.

GLOVER MODEL B, $1,500.

Sixteen passenger bus; motor water cooled, 6 cylinders 5 x 5, cast separately; ignition by storage batteries; hand clutch, sliding selective, three speed roller bearing transmission, located in the middle; drive by the special flexible "traction," consisting of a large traction wheel in the middle in front of the rear axle. One set of brakes of the shoe type, bearing on the rear wheel tires. Steering wheel at the right, gasoline tank back of seat; front springs semi-elliptic, rear full elliptic, wheel base 120 inches; equipment of lamps, horn and tools.

Boyd Gasoline Public Service Cars.

Made by James Boyd & Bro., Inc., Philadelphia, Pa.



BOYD MODEL 21, CHEMICAL WAGON

Chemical and hose wagon; capacity 3,000 lbs. Motor, 30 h. p., water cooled; two cylinders, 4⅝ x 4½, cast separately; ignition by magneto, disc clutch; three speed progressive transmission and [illegible] of gas & expanding & contracting on the rear wheels; tires [illegible] x 4; steering wheel at the right, frame of armored wood; front springs, semi elliptic, rear platform; wheel base of [illegible]

BOYD MODEL 6

4,000 lb. chemical hose wagon. Motor, 60 h. p., water cooled, four cylinders, 5¼ x 6, cast in pairs; ignition by magneto and storage batteries; [illegible] four speed selective transmission; two sets of brakes expanding on the rear wheels; tires [illegible] 38 x 4½ front, twin pneumatic 38 x 4½ rear, on demountable rims; frame of pressed steel; springs front and rear, semi elliptic; wheel base 145 in.

Knox Public Service Gasoline Cars.

Made by Knox Automobile Co., Springfield, Mass.

KNOX MODEL M 3, 2 TON FIRE VEHICLE, $4,500.

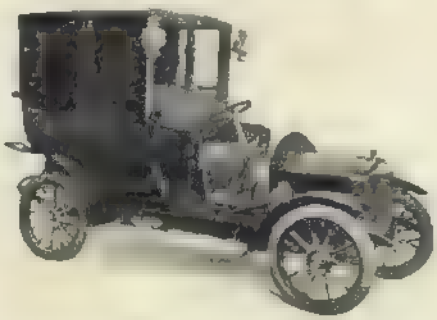
Motor, 48 h. p., 4 cylinders, 5½ x 5½, cast in pairs; jump spark ignition from [illegible] dry cells; speed 40 m. p. h. sliding gears [illegible] 3 speeds forward; direct drive on third; double side chain drive, semi elliptic springs front and rear; 2 sets of brakes on jack shaft and rear wheel drums; wheel base 145 in., tires 40 x 6 front and rear, pneumatic; carrying space 8 ft. 5 in. x 8 ft. 8 in.

KNOX MODEL M-4, 2 TON FIRE VEHICLE, $4,500

Wheel base 128 in.; carrying space 7 ft. 1 in. x 3 ft. 8 in.; other chassis details same as Model M 3

Sultan Public Service Vehicle.

Made by the Sultan Motor Co., Springfield, Mass.



SULTAN TAXICAB, $2,400

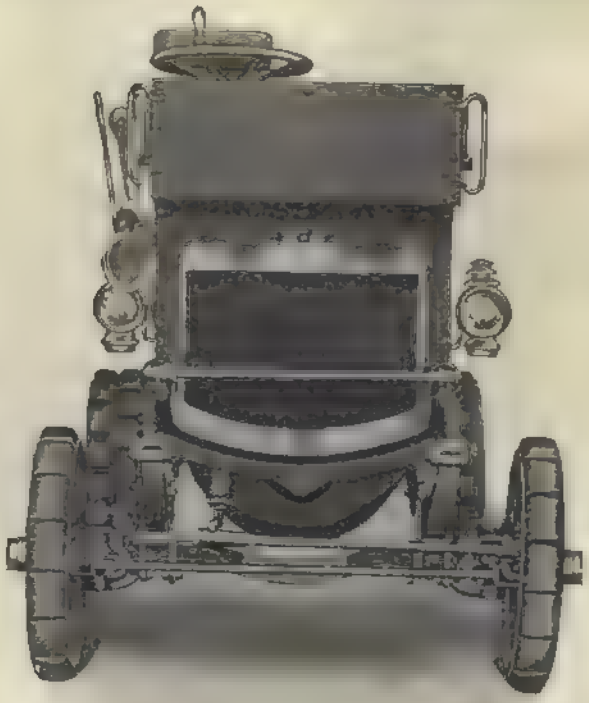
Motor, 12-15 h. p., four cylinders, 3 x 4½, cast in pairs, water cooled; [illegible] speed [illegible] sliding selective transmission, [illegible] double chain drive, three sets of brakes, front springs semi elliptic, rear ¾ elliptic, tires 32 x 4 front and rear, wheel base 98 in.

NAME THE SERVICE

Knox

BUILDS A VEHICLE

YOUR REQUIREMENTS



THAT WILL FILL

WAGONS, TRUCKS, BUSSES,
POLICE PATROLS, AMBULANCES,
SIGHT SEEING VEHICLES,
MOTOR DRIVEN FIRE APPARATUS.

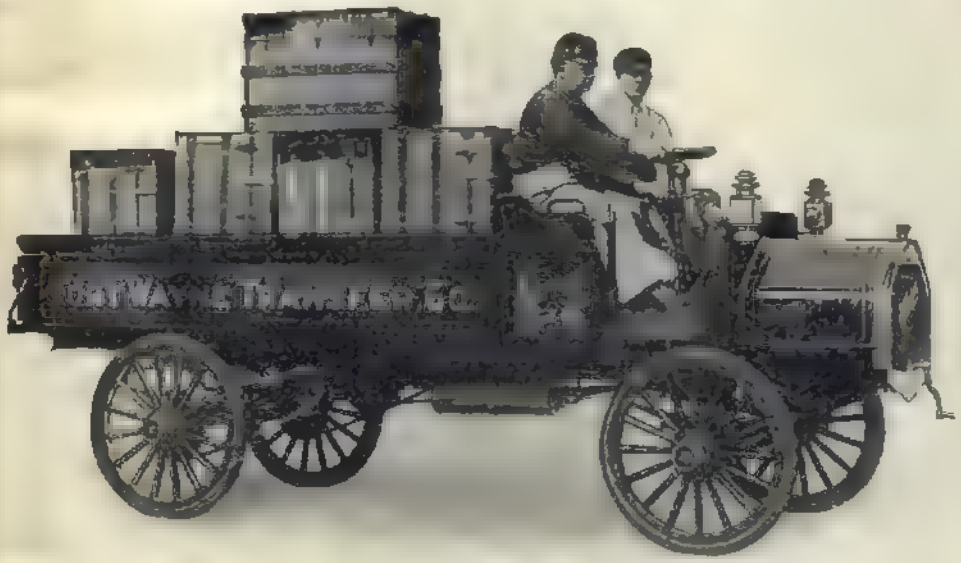
KNOX AUTOMOBILE CO.
SPRINGFIELD, MASS.

McIntyre

THE NAME THAT STANDS FOR QUALITY

IN

COMMERCIAL CAR CONSTRUCTION



MODEL XIV.

Capacity, 2000 lbs.; 2 cylinder, 24 H. P.; water-cooled motor

Price, $1350

SPECIFICATIONS:

Capacity, 2000 pounds
Standard Body, Express. Special bodies to suit purchaser.
Length of Body, Back of Seat, Inside, 106".
Width of Body, Back of Seat, Inside, 42".
Wheel Base, 94"
Tread, 60". (Wide track, $25 extra.)
Wheels, Artillery type, 32".
Tires, solid rubber, 2½".
Clearance, 12".
Drive, shaft to counter shaft, double side chains.
Frame, Angle Steel.
Springs, Full elliptic front and rear, 2" wide, 9 leaf
Axles, Forged steel, 1¾" square, roller bearings throughout
Motor, 2 cyl., bore 5¼", stroke 4½".
Horsepower, 24.
Cooling, Water-cooled, vertical tube type radiator
Location of Motor, In front under hood on pressed steel frame
Transmission, Improved planetary in unit with jack shaft.
Speeds, Two speeds forward, one reverse.
Gear Ratio, 8 to 1.
Gasoline Tank Capacity, 20 gallons
Oil Tank Capacity, One and one half gallons.
Mileage Capacity, per Gallon, 12 to 15 miles.
Ignition, Low tension, magneto and dry cells
Clutch, Multiple disc.
Lubrication, Self contained oiling system.
Carburetor, Gravity float feed.
Steering, 14" hand wheel, positive gear type.
Control, Spark and throttle on top of steering wheel.
Brakes, Two contracting on rear wheels.
Speed, 4 to 16 miles per hour.
Equipment, 3 oil lamps, horn, tools and jack
Standard Coloring, Body, Brewster Green, red gears, striped.
Total Width, 66".
Total Length, 187".
Net Weight, 2200 pounds.

This model has regular equipment of governor on motor and speed of motor is set at 1200 R. P. M before leaving factory.

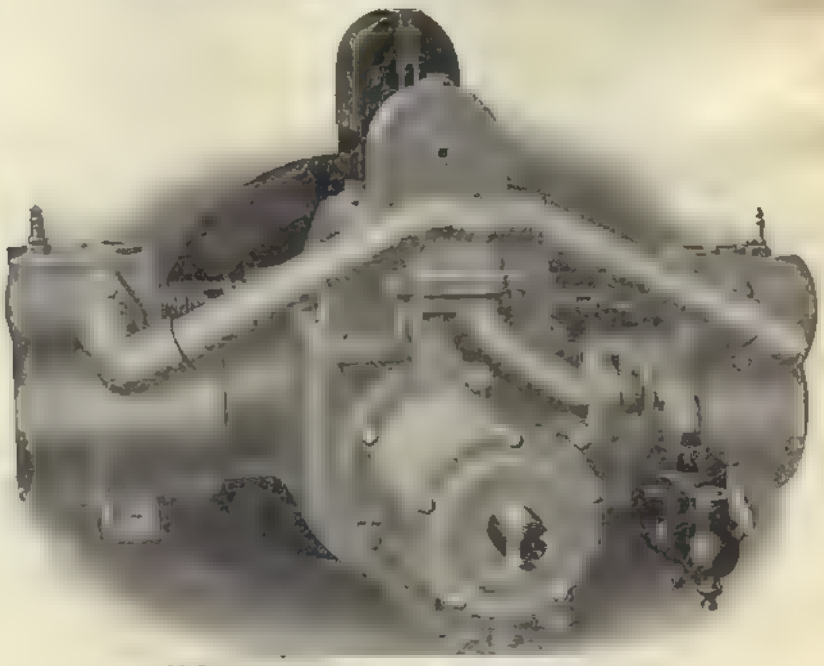
W. H. McINTYRE COMPANY, AUBURN, INDIANA, U. S. A.

McIntyre

THE NAME THAT STANDS FOR QUALITY

IN

COMMERCIAL CAR CONSTRUCTION



McINTYRE SPECIAL HEAVY DUTY MOTOR

THE McINTYRE COMMERCIAL CAR

is not an experiment,—it is backed by forty years of acknowledged success in the building of the highest grade business wagons and eight years of motor car manufacturing.

Model XIV represents a distinct progress in motor truck construction. It is built right—it has no weak features. We know it will make good and we stand behind it.

Note this important McIntyre feature:

THE SPEED IS CONTROLLED BY THE OWNER—NOT BY THE DRIVER

Fully 90% of Commercial Car troubles can be traced to fast driving.

The governor on our Special Heavy Duty Motor allows only a certain speed of the engine.

The supply of fuel is checked by means of a butterfly valve which operates in the intake manifold, and no matter how anxious the driver is to reach his destination, he cannot drive faster than permitted by this governor.

This means longer life to the Truck—full service from the tires, and insures to our customers a power plant that will give efficient and continuous service.

LIVE DEALERS cannot afford to-day to be without a complete line of Commercial Cars.

The McIntyre line comprising trucks and delivery wagons from 500 to 2500 lbs. capacity, and at prices ranging from $465.00 to $1650.00 is unrivaled in quality, simplicity, price, correctness of mechanical details and an abundance of power.

Write us NOW for our Catalog and Agent's proposition!

W. H. McINTYRE COMPANY, AUBURN, INDIANA, U. S. A.

Gramm First Demonstrated How To Build Successful Motor Trucks

You Cannot Get in Any Other Truck the Special, Exclusive Gramm Features

The above facts are of the utmost importance, because they concern the **future** of the truck you should buy.

The success of the Gramm furnished the foundation for the strongest, best financed, and most efficient organization of its kind in America; the largest and best equipped, exclusive motor truck factory in all the world

Strong statements? Yes. Purposely made so broad and strong that you will want to know whether they are literal truths

If they are true—and we court your searching investigation—prudence and sound judgment will prompt you to buy the Gramm for the two following reasons:

(a) *The Gramm indisputably offers you the most for your money to-day.*

(b) *The Gramm organization—the Gramm plant—the Gramm success—all predicate that degree of* **permanency** *which you must consider when you choose a type of truck.*

No wise man will buy an untried product nor invest heavily in mechanical devices whose makers have yet to prove their right to survive.

The Gramm is not only constructed throughout with material of the highest grade, but it is a triumph of motor truck design

Its 3-point motor suspension—its selective transmission—its solid chrome steel gears, case hardened and heat treated—large wheels—ample tire capacity, are only a few of the features which you should have and the Gramm can supply

The Gramm is made in 1-Ton, 2-Ton, 3-Ton and 5-Ton Models.

When you own the Gramm you possess the standard by which other trucks are judged.

Let us supply you with our literature and the name of your nearest Gramm Agent. Write TO-DAY.

THE GRAMM MOTOR CAR CO.

105 So. Lima St. **Lima, Ohio, U. S. A.**

Overland

LAST July we announced our $900 thirty horsepower, five-passenger touring car. Up to that time no one ever expected to be able to get a car of this size and type for much less than $1250. Yet here it is. And thousands of people who expected to put twelve hundred and fifty dollars in a thirty horsepower touring car have bought this $900 Overland and saved the difference. Why shouldn't you keep the difference in your pocket?

On the ground that a fact is a fact let us prove our statements to be correct. Take any $1250 thirty horsepower car you can find, and you will hardly be able to tell the difference between it and our Model 59. Write for a 1912 book.

The Willys-Overland Company, Toledo, Ohio

Overland

THE price of our thirty horsepower coupe car is $1250. It has a powerful thirty horsepower motor — will do fifty miles an hour — the gear and crank casings are of pure aluminum — the selective transmission is fitted with F & S annular bearings — the carburetor is a Model Schebler — the frame is pressed steel.

The specifications of the average $1500 thirty horsepower car fit this description exactly. It can give you no more. So why pay the difference between $1250 and $1500 if $1250 will buy you just about as much as you can get for $1500. Write for a 1912 book.

The Willys-Overland Company, Toledo, Ohio

Overland

IF judged by the value received in the average thirty-five horsepower five-passenger touring car our Model 60 will give you $1500 worth for $1200. It gives you everything that you can get in the best of the other cars of this type and a little more than you can get in the average.

Take the specifications of our Model 60 line them up against any set of $1500 specifications and you will find them practically the same. And not only are the bare specifications almost identical but the appearance, comfort, finish and general construction will balance even. Write for a 1912 book.

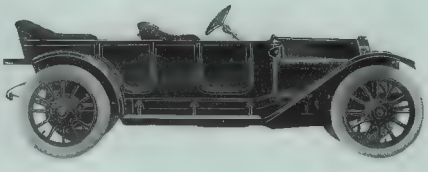
The Willys-Overland Company, Toledo, Ohio

Overland

RIGHT now we are shipping eighty cars a day. In a couple of months we will be shipping one hundred and fifty a day. This is the greatest business — in dollars and cents — ever done in the history of the industry.

If our cars did not give more value for less money than other cars this immense business would not be possible. People buy where they get the most for the least money, and where at least twenty-five percent can be saved it is always worth this consideration. A striking example of this is our Model 61 for $1500. This forty-five horsepower touring car by actual point for point comparison will duplicate any $2000 car made. It has the power — size finish — comfort and completeness. Write for a 1912 book.

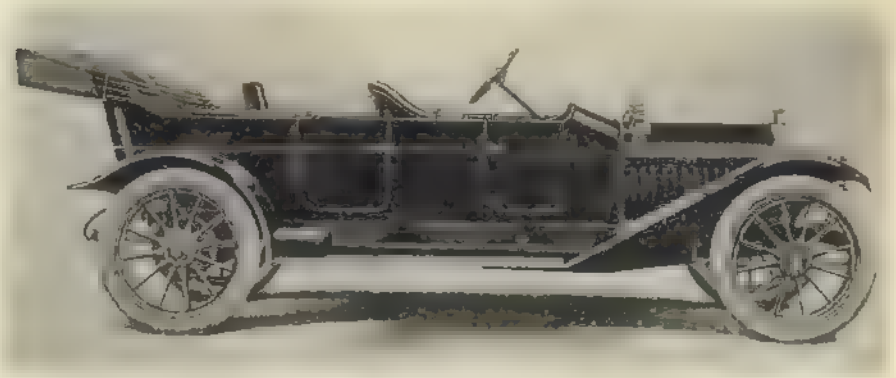
The Willys-Overland Company, Toledo, Ohio



The 1911 Atlas

By C. L. Morris.

The Atlas Motor Car Company, Springfield, Mass., U. S. A., one of the foremost American manufacturing concerns in the exploitation and development of the two cycle motor, offer two chasses for 1911, one two cylinder, two cycle rated at 20 horse power, fitted with a runabout, torpedo or so called fore door type body, and, also with taxicab or delivery wagon body when desired for commercial purposes. The development of the Atlas commercial line is a story apart from that of the pleasure cars. A four cylinder 40 horse power chassis fitted with various types of bodies in keeping with the season's demands is featured as the high powered Atlas.



Atlas Model O touring car. Price $2450 (with torpedo body) as shown. Motor 40 h. p. two cycle, 4½x4½, three speed selective type transmission, three plate clutch with Raybestos lining, motor, clutch and transmission form one unit, a three point suspension, front axle I-beam, rear full floating, wheel base 128 inches, wheels 36 inches dia. fitted with 4 inch tires, seven passengers.

The Atlas Motor Car Company state that in the 1911 engines all undesirable features of previous models have been eliminated, those of worth are retained and bettered. There are some changes in these 1911 Atlas two cycles motors, the oiling system, for example, has been simplified and the various oiling devices attendant with the ordinary car have been eliminated. In other words the owner of a 1911 Atlas simply pours a small quantity of oil into the gasoline tank and by the Atlas arrangement all reciprocating parts of the motor are provided for. This scheme has been tried out on other American cars and has worked well. There is much to commend it since it does away with mechanical oiling devices liable to develop trouble. Needless to say this departure is something to be appreciated by motor car users. An improved Atlas roller bearing, too, supplants the ordinary plain type, this roller type being employed on the connecting rods, crankshaft and in the transmission. The revolving discs on the crankshaft have been eliminated, the change being taken into the crank case through a port in the center of the crank shaft. The Atlas patented system of transferring the charge to the cylinders has been improved by a piston head with only two deflecting channels and two transfer ports in place of four. The Atlas engines of 1911 are of lighter weight than heretofore and are much more compact.

Motor.

The cylinders of the Atlas 1911 two-cycle motors are cast in pairs with integral water jackets and transfer ports, cylinders on both the 20 and 40 horse power models being square, that is 4½x4½. In the lower powered engine there are of course but the two cylinders, in the large motor, four. These cylinders are finished in the best manner possible to ensure perfect compression. The pistons, cast of the same material used for the cylinders, a high grade of gray iron, have four compression rings carried above the piston pins, these pins of 1 inch diameter being of hardened and ground steel, retained in the pistons by set or lock screws. The head of the piston as above stated has two deflecting ribs or channels

The connecting rods are drop forged steel, finished solid top and bottom since they are fitted with the new type of Atlas anti-friction roller bearing which is introduced this year as an improvement, in the opinion of the makers, over the older type of plain bearing. This Atlas roller bearing is built up of a number of hardened and ground steel rollers, these being finished to a mirror like surface. The top and bottom of the connecting rods are so finished as to form the outer race for these rollers,

the inner race fitting to the crank shaft, and piston pins as the case may be. It is very simple in construction and replacement of parts is easily accomplished should it ever be necessary.

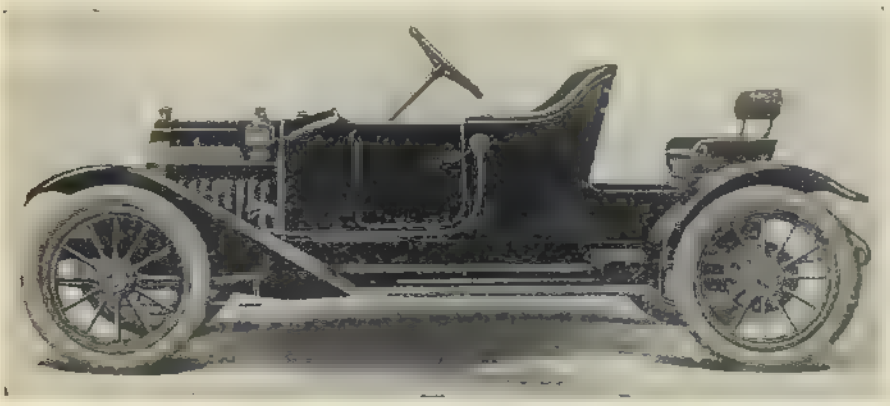
The crankshaft is a one piece chrome vanadium steel drop forging, the bearing surface being hardened and ground. The charge as before stated is taken direct into the crank case through a port formed in the center of the crank shaft. The diameter of the crank shaft is 1½ inches and the bearings for the shaft itself are of the Atlas roller type. Lubrication of a bearing of this type is obviously a simple matter which is one of the advantages pointed out by the Atlas Motor Car Company.

The crank case is of aluminum the cylinders being bolted to the motor base with steel studs.

frame member to the other. The clutch shifting rocker shaft is mounted directly above the clutch, the bar being anchored at each side of the aluminum clutch support of the extension of the crank case, and this being of webbed construction is very rigid. The rear support is at two side points. With a trunnion forward support all side strains and twists imposed on the frame are provided for and the motor does not suffer in consequence of any such strains.

Full Floating Rear Axle.

Final drive in the Atlas 1911 cars is through a universal jointed propeller shaft this having two joints and being of 1½ inches diameter. The rear axle is of full floating type fitted with roller bearings. The driving axles are 1½ inches in diameter made of chrome nickel steel, these



Atlas two cylinder two cycle 20 h. p. torpedo runabout, motor clutch and transmission in one unit with three point suspension, three plate clutch, sliding gear transmission selective type three speeds forward and reverse. 106 inch wheel base, 32x3½ inch wheels, price $1250

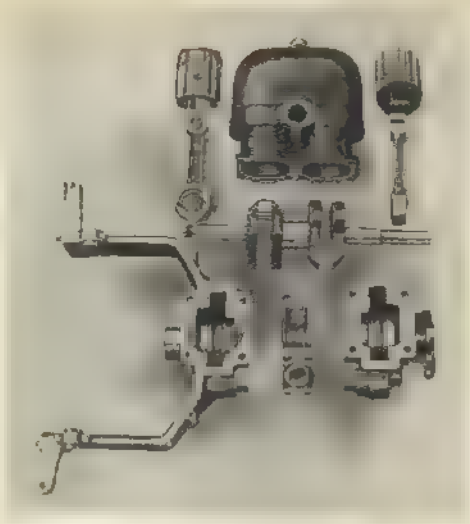
Clutch.

The Atlas clutch is of the three plate type, the center member or plate being faced front and back with Raybestos. The fly wheel which is keyed to the crankshaft is 15 inches in diameter, 3½ inch face. Holes drilled in the rim of the wheel provide for positive registry of the clutch. There is also provision for take up for wear, this being accomplished through two set screws by means of which the tension may be varied to suit the operator of the car The whole clutch mechanism is contained within the fly wheel and is easily gotten at in case adjustments are necessary.

Transmission.

The transmission is a selective sliding gear set of three forward speeds and reverse; the gear box is of aluminum, and is attached to an extension of the engine frame so that the motor, clutch and transmission form a complete unit. There are three support points, the forward support of the trunnion order being to a cast steel cross member extending from one side

axles being fitted on the outer ends with large four jaw hub clutches which register in the wheel hubs. The axles are squared on the other ends in accordance with common practice. The car load is supported by the axle tubes or housings so that to remove the driving axles is a simple matter and there is no necessity for removing the wheels. The driving pinion which is formed integral with the shaft is supported in roller bearings as are the differential and bevel gear. The wheels are fitted with roller bearings. The differential housing is of semi-circular design, the housing being cast iron and the axle tubes drawn steel brazed and pinned to the differential housing. A rear cover plate of large dimension permits of access to the case when such is necessary, and with the bearings then fully exposed adjustment is quickly accomplished. An adjustable truss rod, steel ⅝ inches in diameter is fitted which adds strength to the rear construction. This same rear axle construction as well as the same transmission is used on both the two and four cylinder Atlas cars.



Components Atlas two cycle motor, cylinders cast in pairs, double deflector plate pistons, solid connecting rods, crank shaft center of which contains port which acts as admission valve, yoke to which clutch and transmission are bolted.

Axle.

The front axle on all Atlas models is a drop forged one piece I beam member of chrome nickel steel, the steering jaws and spring seats being integral. The wheel bearings are Timken roller. Thrust on the steering pivots is taken up through thrust bearings.

Wheels.

On the 1911 four cylinder two cycle 40 h. p. Atlas the wheels are 36 inches in diameter, this car being known as the Model O. The tires are 4 inches in diameter front and rear. Larger tires are supplied at a slight additional cost. On the Model N, as the torpedo runabout is known, the wheels are 32 inches in diameter fitted with 3½ inch tires. Spokes are of second growth hickory.

Control.

Control of the Model O, four cylinder Atlas and the Model N two cylinder car is of the usual order, the cars being steered from the right. The steering connections are carried back of the front axle. The steering assembly is of tubular steel ⅞ inches in diameter fitted with ball and socket joints. The steering wheel is 18 inches in diameter, the wheel spider being of aluminum, four spokes, the hand rim being rubber. The steering post is 1½ inches in diameter. Spark and throttle levers are mounted on a quadrant above the steering wheel in the usual manner. The steering gear is of the worm and gear order, and the case is fitted with thrust bearings top and bottom. It is of cast steel and is bolted to the frame side member on the right. Gears are shifted by a hand side lever. The clutch is shifted by a foot lever of a semi-stirrup design, the foot brake being worked in the same manner while the emergency brake is actuated through a hand side lever.

Brakes.

There are two sets of brake on the 1911 Atlas cars, one set working on the rear wheel pressed steel drums, the other on the transmission shaft. The transmission shaft brake is of the contracting band type, the drum being of pressed steel 14 inches in diameter and 3 inches wide. This is the running, or foot brake. The emergency set is on the rear wheels and is of internal expanding type fully enclosed, being 14 inches diameter with a face of 2 inches. Brake action is equalized and the draw bars of the rear wheel brakes are tubular steel provided with means for adjustment. Either set is sufficiently positive to bring the car to a quick stop under all ordinary conditions.

Frame.

The frame of the Atlas 1911 car is pressed steel inswept forward and dropped at the rear two inches. There are four cross members and the frame is further strengthened by heavy gusset plates. The forward cross member of the frame is dropped and provides a saddle for the radiator.

Springs.

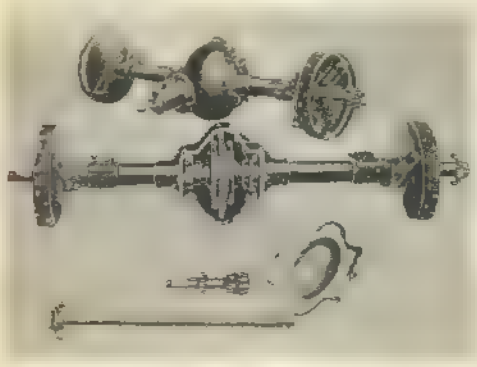
The front springs of the Atlas pleasure cars are semi-elliptic in design, these being anchored to the forward frame ends, to shackles on the frame side members and to the integral spring seats of the I-beam front axle. These are built up of five graded Krupp leaves 2 inches wide, the seats being 36 inches long. The rear springs are of the three quarter elliptic type, there being seven graded leaves 2 inches wide and 22 inches long. The bottom sections anchored in forward frame brackets and to the oscillating spring on the rear axle tubes have 9 graded leaves, the seats being 2 inches wide and 52 inches long. With

Clutch details of Atlas 1911 pleasure cars. Three plate type housed in fly wheel, center member faced front and back with Raybestos.

three quarter elliptics at the rear of good length and free acting forward sets the Atlas is a comfortable riding car.

Cooling.

A square tube radiator, a six bladed aluminum gear driven fan and a centrifugal shaft driven water pump comprise the cooling equipment of the Atlas cars for 1911. The radiator is set in a forward cross member of the frame and is of conventional design. The water pump is on the left side of the motor and is driven from the gears in a forward compartment of the motor, the pump being of bronze. The water drawn from the radiator is lifted through a 1¼ inch manifold and after circulating through the integral water jackets of the cylinders passes back to the radiator. The cylinders being cast with integral water jackets and the centers closer together there is increased water circulation.



Atlas full floating rear axle, bearings, Timken roller, driving axles four jaw clutch type, 1⅛ inches in diameter, wheel bearings Timken roller, also shows brake assembly.

Carburetor.

The Atlas carburetor is placed on the right side of the motor on both the four and two cylinder models. Control is had from the steering wheel button. A water jacketed inlet manifold 1¼ inches inside diameter is secured to the crank case. The exhaust manifold, a cast iron member 2½ inches inside diameter, is bolted to the left side of the motor. The muffler which makes for a quiet exhaust is placed between the third and fourth cross members of the frame. One feature of two cycle construction that has hitherto caused more or less trouble has been the improper scavenging of the spent gases. The Atlas system has been so perfected that the highest efficiency is said to be realized. With the charge admitted to the crank case through the internal port of the crank shaft, compressed in the crank case and forced to the cylinders and with a double deflector type piston it is claimed for the Atlas motor that there is complete scavenging of the spent gases. There are two liberal sized exhaust ports. By the Atlas disposition of the ports the inlets are as far removed as possible from the exhaust. The claim is that this improved method of Atlas distribution of gas from the crank case to the cylinders affords a higher fuel efficiency, never before attained or believed to have been possible. All possibility of back firing is precluded by corrugated plates in the transfer ports.

Ignition.

The Atwater Kent system of ignition is employed on the Atlas 1911 cars, the sparking machine being actuated through a horizontal steel shaft and 7-16 diameter bronze couplings from the water pump. The ignition is controlled from a switch on the coil box mounted on the dash and from the button on the steering wheel. This system of ignition is too well known to require any lengthy description. The spark plugs are placed in the heads of the cylinders, the ignition cables being carried in a cable guide suspended above the cylinders.

Lubrication.

In the 1911 Atlas car a departure is made in the matter of lubrication. All mechanical devices have been eliminated and the lubricant is admitted to the cylinders with the fuel. The proportion of the oil is one quart to about 8 gallons of gasoline. It is the claim of the Atlas Motor Car Company that this system of lubrication affords very satisfactory results and that about one third as much oil is required by this method of lubrication as under the mechanical and force feed or splash devices. It is also claimed that carbonizing of the cylinders and ports is prevented and that there is no smoky exhaust. The system had been thoroughly tried out before being applied to the 1911 cars and under the severest test is said to have given the best of results. Obviously with such a system a simplification of the lubrication of the motor is effected. Simplicity is the thing and this makes one less feature of the motor to require constant attention.

Bodies.

As before mentioned various types of bodies are fitted to the Atlas cars depending entirely upon the option of the purchaser. Atlas bodies are of metal nicely finished throughout and in the Model O touring types either fore door or torpedo bodies are fitted as well as the usual closed types. With the torpedo model the wheel base is 128 inches with a tread of 56 inches while in the regular touring types the wheel base is 120 inches. Finish is in royal purple and the touring bodies accommodate five and seven passengers. The equipment includes five lamps, Prest-O-Lite gas tank and a complete tool outfit. The list price of the touring body is $2400 while the torpedo model is $2450. Extra seats and larger tires than standard equipment are furnished at an additional cost.

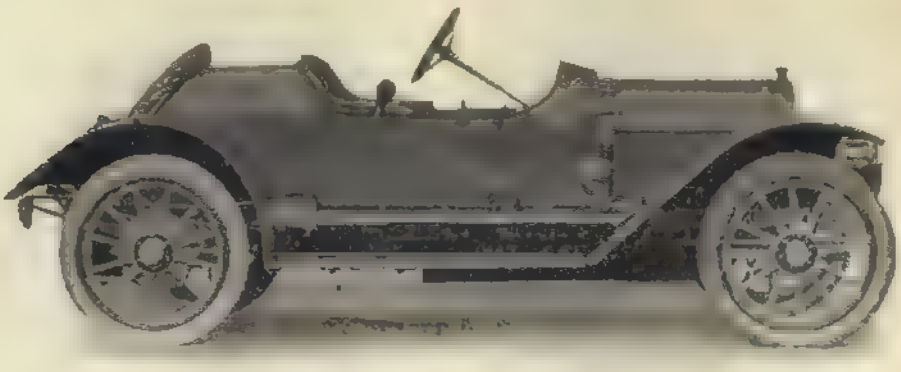
The model N torpedo type runabout or fore door as some would regard it, sells at $1250, there being the usual rumble seat. Finish is in auto gray or royal purple. The equipment includes five lamps, Presto-O-Lite gas tank and full set of tools.

The touring types are fitted with long sweeping fenders which afford full protection from road splash and the space between the running boards and the frame is closed in. With the torpedo model the control levers are placed within the forward panel

The treads are made of a special processed chrome leather, made specially for the Bfictson Co., and under their own instructions. The pores of the leather are hermetically sealed on one side so as to obviate the possibility of water soaking through and coming in contact with the tire. The inside of the leather is so cured that the pores are open, thus permitting of the retention of the life or oil in the leather and retaining its pliability or softness

The tread is made with five thicknesses of fibre, which is manufactured from sea island cotton. These thicknesses of fibre are cross-grained in such a way as to make it almost impossible to even drive a nail through. Over the top of the fibre are two layers of chrome leather. The first, or outside layer has an independent piece of extra thickness. Beneath the fibre layers is another layer of chrome leather. The steel studs are driven through the three thicknesses of chrome leather and five thicknesses of fibre and turned on the inside in such a way as to cause them to remain permanently in place. An extra piece of "special" chrome leather is then attached on the inside of the tread, covering the turned ends in such a way as to absolutely obviate the turned edge of the steel studs coming in contact with the tire proper over which the tread is attached, so that there is no scraping or cutting of the tire and when the tread is detached, it is claimed the tires are as smooth and clean as the first day they are attached.

To the sides of the tread are attached steel buttons, which prevent chafing the tread when running close to a curb or other obstruction.



A New Columbia Mark 85 Roadster.

One of the most striking 1911 cars made by the Columbia Motor Car Co., of Hartford, Conn., is the Illustrated Mark 85 Roadster

Vestibuled, or fore-doors, first introduced in Columbia cars two years ago, are shown in a new design and for a useful purpose, since the door on the right side where the steering is done, is both practical and convenient. Back of the seats is a rear deck with rounded top inclosing a large trunk compartment and the gasoline tank. The long, straight sides of the body are unbroken by panels and the graceful appearance is not marred in any manner. A cap of the gasoline tank is all that shows on the surface. In the extreme rear of the deck is a sloping door, strongly hinged, to which the tire carriers are attached. Access to the compartment is thus gained without removing the tires, since the raising of the door also lifts the tires. Aside from the enclosed space, there is ample baggage room on an interior trunk rack.

The color is Noisette, a new color just developed. It is a strong, warm gray, ideal for touring since it doesn't show dust. It is found in the hazel nut after it has had opportunity to dry for three weeks. If allowed to dry longer, the color is darker and less than three weeks' drying makes a lighter shade.

CORRECTION: In the February issue, on page 197, the prices of the Connecticut Tel. & Elec. Co.'s magnetos were given incorrectly. It should have read $90 for the type A-4 and $100 for the type A-6 cylinder. For dual types an extra charge of $15 is made.

The Dyneto Electric Co., of Syracuse, N. Y., has purchased the Elbridge Electrical Mfg. Co., of Elbridge, N. Y., and are now manufacturing Elbridge Dynamos and Switches in addition to their former line.

Commercial Cars in Denver

By C. M. Smyth

The commercial use of the motor truck in the United States, while yet in its infancy, is rapidly discarding its swaddling clothes. This fact is being forcibly impressed upon the merchants of the whole country and especially upon those of our western cities, where they seem to be a trifle slower than

Fig. 1. A 3-ton Reliance truck, belonging to the Colorado Condensed Milk Company. This truck carries a three-ton load from Ft. Lupton to Denver every day of the year, except Sunday. The distance is 36 miles each way, and the round trip is made in 4 hours

their eastern brothers in grasping the possibilities and wonderful advantages of motor delivery methods. In Denver, Col., while its merchants who are still clinging to the horse-delivery system are displaying

Fig. 2. Tower truck used by Denver City Tramway for wire repair work. Built upon a Grabowsky chassis.

a slowness in grasping the idea of motor delivery, there are several causes which may be assigned for such a condition.

In the first place the recent depression which engulfed the business of the whole country was not so seriously felt in the West until the East had begun to recover from it. And like a man who is recovering from a wallop in the solar plexus,—while he is able to again stand upon his feet—he is advancing very cautiously, being uncertain as to whether the danger has passed or not. But with a return of confidence, which is coming on rapidly now, and an assurance that such an occurrence is not like-

Fig. 3. A Rapid one-ton truck, built for piano moving for the Turner Moving Company.

ly to happen again or that they may be able to defend themselves against it if it did occur, the West will reach out and grasp the motor truck idea with such avidity that the results will be electrifying to the manufacturers.

Those of Denver who are now using motor trucks, and doing it systematically, are thoroughly satisfied and just as quickly as they find capital a little more flexible, their determination is to expand until they have discarded the horse delivery they are now using. A difficulty lies in the fact that it seems impossible to obtain an absolute record of running costs or a table of actual performance from those using trucks for the benefit of those who are not. The man not using an auto truck is sometimes hard to convince, and would like to see the records

Fig. 4. A four-ton baggage truck, built in the shops of the Denver Omnibus and Cab Company. Equipped with Exide 42-cell batteries and Diamond tires. Has carried 70 trunks and 20 pieces of luggage in one load. Covers a route including 9 hotels in one hour. Averages 40 miles a day every day of the year.

for a long period, thinking that a demonstration is apt to be a strained performance and one impossible to maintain.

The advantages gained from almost every standpoint should be as self evident in Denver as in the east. Where a user in some certain class of business might find that the sum total cost of the service has not diminished a particle below his older horse system, he discovers that the efficiency has increased many fold—which in reality is a

Fig. 5. Battery of three one-ton Rapid trucks belonging to Donaldson & Howard Commission Company. All equipped with Firestone tires.

big advantage gained. Another merchant will see both a reduction in costs and a gain in efficiency.

None has been more evident than in the case of Donaldson & Howard, who conduct a wholesale fruit commission business upon Denver's market. They were the first to install a motor truck in that line of business and their success has been so very marked that they have since added two more, giving them a battery of three 1½ ton Rapid trucks. They gained so many advantages over their competitors, by being able to deliver a patron's order many times quicker and sometimes when a competitor could not even get hold of his wagons which were out somewhere and not yet returned, that the latter were literally forced into installing motor trucks as a method of holding their trade.

What happened in the commission market of Denver is applicable to every other class of business in the city. It might be compared to life in the western mining camp where no law exists but the gun law, and the carrying of a gun was a necessity and not a matter of choice.

Fig. 6. A little Brush car with a specially built top for the firm of Hedgcock & Jones, dealers in linens and laces. Averages 40 miles a day with above a hundred stops.

In Denver in the past three years there have been some 85 motor trucks of all classes installed in the various lines of trade and by far the larger proportion have come into use in the latter six months of that period. It would be impossible in the space of this article to enumerate each and every case where they have been installed; but suffice it to say there are few lines of business where goods or merchandise are to be transported from one place to another but what have one or more merchants who are using the commercial car in the delivery department.

Yet, at the present writing, there seem to be none who have installed the system

Fig. 7. A sight-seeing car belonging to the Denver Excursion Company. It averages 38 miles a day with capacity of fifty passengers.

exclusively to the elimination of the horse about their place of business.

It is impossible to name any make of car which is in particular favor in Denver over other makes, as one car may excel in one line of duty, while in another its competitor might make a better showing, depending wholly upon the nature of the difficulties it would encounter. It might be merely incidental that more Rapids seem to be in use than another make. The Grabowsky is making some excellent showings and among many others the Universal truck is in evidence. Among the electric trucks the General Vehicles are conspicuous.

But the salesmen of gasoline trucks in Denver had better look to their laurels, as a large concern with unlimited capital, the chief dispension of electric current in the city, has a man on the job who is a live wire, and whose duty it is to see that any possible or prospective purchaser of a truck is presented with the fullest information concerning the possibilities and economies of the electric truck.

And as the advantages of the motor truck delivery over that of horse delivery are no longer in doubt in the minds of merchants all over the country, the demand is certain to increase its lead over the supply, at least for some time to come. If the rate at which motor trucks are being installed in Denver can be taken as a barometer the prices are more apt to advance in the immediate future rather than diminish

COMMERCIAL CARS MAKE GOOD

During a recent snow storm in New York City, which severely handicapped traffic and delayed deliveries in that city, a count was kept in the Alco offices at Broadway and Sixty-second Street, of all the passing vehicles.

In one hour sixty-three motor trucks were counted as over and against twenty-nine two-horse teams and one four-horse team, and not only was such the case, but without exception the horses that successfully pulled the loaded wagons could make only an average speed of 1½ m. p. h., while the trucks traveled along at their usual rate.

In other words, the horse failed and the commercial car made good when most needed.

The Detroit Taxicab & Transfer Company, of Detroit, Mich., has installed ten two-ton Kelly commercial cars for use in the general transfer business in that vicinity.

The Commercial Motor Truck Construction Company, of 828 Broad Street, Newark, N. J., has recently been incorporated with a capital stock of $125,000. The company will manufacture motor cars.

The Longstreth Motor Car Company, of Philadelphia, Pa., is now devoting its energy exclusively to handling the Alco line of pleasure cars and trucks.

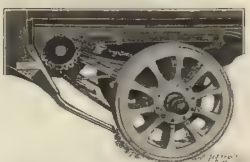
WANT AUTO FIRE ENGINES

Agitation for the purchase of motor-propelled fire apparatus by the city rather than the completion of the plan to adhere to the old style horse-drawn vehicles, has been started by the Philadelphia Board of Trade, the membership believing that the improvement of the department along the line suggested would be greatly to the benefit of the city, as has been shown in other municipalities.

The committee suggests that the question of the conversion of hook and ladder trucks and aerial trucks into motor-drawn apparatus should be carefully investigated, and is of the opinion that motor-propelled chemical and combination wagons can now be safely purchased and are dependable for service as well as motors for district engineers and supply wagons.

From reliable sources the committee learned that the following cities and towns within a radius of 100 miles from Philadelphia have installed motor-driven apparatus: Jersey City, Newark, Paterson, Passaic, Trenton, Reading, Norristown, Phoenixville, Pottstown, Jenkintown, Hatboro, Cynwyd Ardmore, Radnor, Wilmington, Milltown, N J., and others. Some cities have as high as forty-two pieces already in service, and in many small towns having a population of 5000 to 10,000 one or more pieces are in service.

Charles E. Hagmann, 221 South Hoyne Avenue, announces that he will market Hatfield motor wagons in Chicago. This power wagon is manufactured in Elmira, N. Y. It is particularly adapted for use among butchers and grocers, and is termed a "fool proof" machine. It has no steering knuckles and possesses many innovations in structural design that should make it popular among business men with light haulage problems.



Sand Helps Traction of Steel Tires.

The French army is giving preference to motor trucks equipped with steel tires. The use of steel tires of course necessitates extensive changes in chassis design. One manufacturer has modified his car by placing the motor and gear box on a subframe attached to the main frame through a series of coil springs. The accompanying photograph shows the manner in which another maker provides a sand box of a type similar to that used on electric street cars. The sand gives the driving wheels better traction on wet or slippery streets.

Kearns Commercial Cars

The Kearns Motor Car Company, of Beaverstown, Pa., is the manufacturer of a line of commercial cars which are somewhat of a deviation from the general type of commercial vehicle construction.

Their aim has been to embody simplicity and efficiency, and to effect this they have produced a car which is valveless, gearless and clutchless. This may seem a somewhat aggressive step when one considers the usual type of transmission and the four cycle engine so successfully employed by commercial car builders for several years past, but according to accounts received from users of the Kearns, the adoption of new ideas and theories pays at times.

Kearns Commercial Car with flare board express body

Kearns Two-Cycle Motor.

The Kearns motor is of the air cooled type, the principle of heat radiation being used to effect this cooling.

In casting the cylinders, the walls have been made as thin as possible without encroaching upon their necessary strength, and they are turned both inside and out, a ⅛ in. spiral groove being turned on the outside of each cylinder, running from top to bottom. In this groove is carried a 28 gage piano wire to which is fastened pieces of copper ⅜ in. wide and 2 in. long, the object of which is to carry off the heat radiating from the cylinder walls

A large fan, located on the front of the motor, driven by an adjustable belt, is used to cool the splines, and because of the fact that the cylinder nearest the fan would naturally be cooled most easily, the splines of each succeeding cylinder are proportionally longer, to the end that each cylinder may receive an equal share of fresh air.

The cylinders, as shown, are cast separately, and the pistons are fitted with four

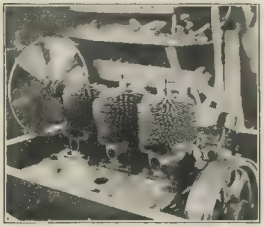


Fig. 1. Kearns air-cooled motor, showing the intake and exhaust ports and copper cooling splines.

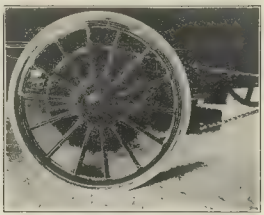


Fig. 2. Showing extra large sprocket and external brake for heavy duty work.

rings on top and two below, and are so designed as to prevent the gases passing through the by-pass port and causing back-firing into the carburetor.

The crank shafts are high-carbon, open hearth steel forgings, and the bearings, which are of phosphor-bronze, are of such length and diameter as to ensure cool running and longevity.

Fig. 3. Driving disc and Hyatt roller bearing. Note 1½-in. shaft running through disc.

The connecting rods are I-beam sections, having easily adjustable bearings.

The crank case is made of aluminum, and ranges from ⅜ to 1 in. in thickness in places requiring the greatest strength.

The engine is supported in the frame by two steel cross members, which are 2 x 2 x ⅛ in., and the engine, which has a 4 in. bore and a 4 in. stroke, and which is rated at 22 h. p., is encased in a sheet-iron housing, the object of which is to keep the motor free from dust and mud.

Carburetion and Ignition.

The Model D Schebler carburetor is used on all Kearns motors, and by its well-known simplicity and flexibility, provides a means of carburetion which is in keeping with the Kearns principle.

The ignition system is the Atwater-Kent, which uses but one contact point on the timer and distributor. There are no vibrators on the coil box, and it is claimed that a hot spark is to be had at both high and low engine speed, through the use of a set of dry cells only.

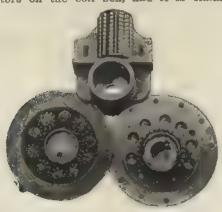


Fig. 4 Upper objects are Hyatt roller jack-shaft bearing and hanger; lower are parts of differential.

Kearns Friction Drive Transmission.

The Kearns transmission entirely eliminates gears and cogs, and by its use any number of speeds may be had.

It consists of a disc having a high coefficient of friction and a friction fiber wheel mounted on the jack shaft. The driving disc is 20 in. in diameter and is carried on Hyatt roller bearings. The shaft through the disc is 1⅛ in. in diameter, and is connected to the motor through a universal joint, which also acts as a spring coupling. The friction wheel is 18 in. in diameter and carries a Rockwood fibre 1¾ in. wide. The differential is of the spur type and is located on the jack shaft, which is supported by two Hyatt

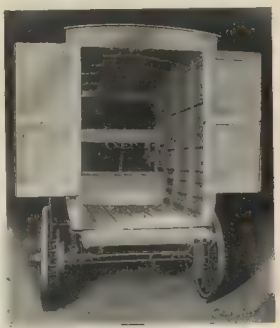


Fig. 5. Rear view of Kearns car, showing inside finish of closed body.

roller bearings each 4 in. long and housed in an oil-tight and dust-proof case. At each end of the jack shaft are twelve-tooth sprockets which drive the rear wheels through two side chains having ⅝ in. rollers of 1 in. pitch. The disc and friction wheel, like the engine, are encased to keep out mud, stones, etc.

Wheels, Brakes and Axles.

The wheels are 34 x 2 in., equipped with Swinehart endless solid clincher tires. They have sixteen spokes, from 1 to 1½ in., front and rear, and the height may be varied according to the road, style of car and size.

But one set of brakes is usually supplied, although for very heavy cars, and those

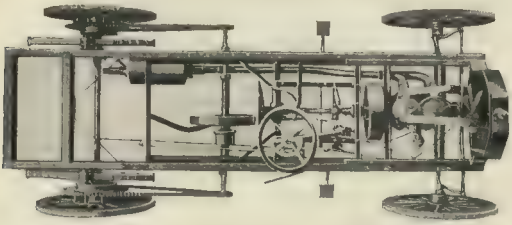


Fig. 6. Top view of Kearns chassis, showing friction drive transmission and chains to rear wheels.

for use in a very hilly country, an external brake may be provided. Brakes are lined with Raybestos 1½ in. wide and ¼ in. thick. Much braking is done also by use of the reverse of the friction disc, as this means is very effective and harmless to the transmission.

The axles are 1¼ to 2 in. square, varying according to the use to which the car is to be put. The front axle has a 2 in. drop and is coached; that is, octagonal in the center and to within 10 in. of each end, thus affording a neat appearance.

Spring, Frame and Steering Gears.

The springs, like the axles, vary in size, according to the use to which the car is to be put, ranging from five leaves 1¼ in. wide to seven leaves 2½ in. wide. All springs are hung beneath the axle, thus affording a low center of gravity.

The frame is of wood 5 in. deep and 2 in. wide. It is braced at each corner by a steel plate and on each rear end by two long braces. There are also two cross members and on either side a 2 x 2 in. steel angle runs full length, and upon this the machinery is bedded.

The steering gear is of the Gemmer irreversible type. Spark and throttle controls are above steering wheel and run through the steering column, making them easily accessible.

Equipment and Finish.

The equipment consists of lamps, horn and tool kit. Bodies and dash are finished in natural wood. The color is optional.

The Detroit Fire Chiefs.

The fire chiefs of Detroit, Mich., all use automobiles, and above they are seen in front of headquarters. Six years ago the second automobile shown at the right was purchased from the Cartercar Company. Five years ago the end car was purchased. These two cars have been in continual service since. When the matter of automobiles for each of the battalion chiefs came up, the Cartercar Model H 30 h. p. was selected for the purpose.

TO RENT COMMERCIAL CARS

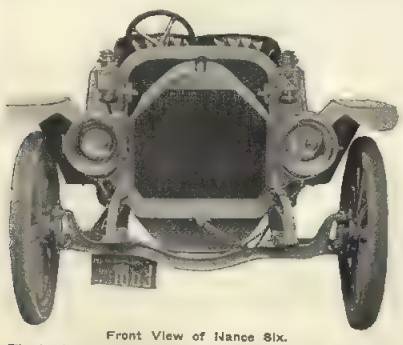
The Mallory Transportation and Storage Company, of Toledo, O., is a new corporation with a capital stock of $150,000, the purpose of which is to give manufacturers and other firms and individuals, who have a large amount of heavy cartage, the advantage of a large fleet of heavy Commercial cars without the necessity of purchasing them.

The company will have twenty-eight Commercial cars for heavy duty and enough contracts have already been placed to keep these motor cars busy for a long time.

Since the coming of the six cylinder motor, more and more automobile makers have been turning their attention to this, the most smooth running, the most obedient to the throttle and withall most satisfactory engine yet devised for motor car propulsion. None of the six cylinder car makers have ever reverted to four cylinder types, and each year sees an increase in the ranks of the six cylinder car makers. There is a reason,—the total absence of vibration, the even pulling power, the elimination of noise and the ability to throttle down to slower than a walk, yet with possibilities of instant acceleration under the action of the throttle alone, have rapidly endeared the six cylinder car to all those of the buying public who were fortunate enough to have the wherewithall to purchase this most expensive type of motor car. Today, however, we find the Nance Motor Car Co., 1208-1212 Vine street, Philadelphia, offering an entirely new and strictly high grade six cylinder car at a price which brings a six cylinder car within the reach of the average motorist. The new machine is known as the Nance Six, and embodies in its makeup only such material and units as are well established on the American market and whose reputation and sterling worth have been proven by years of satisfactory and efficient service.

The personnel of the Nance Motor Car Co., includes the names of men who will be recognized by those familiar with the industry as being very prominent in the development of one of the most successful six cylinder cars made in this country. The officers of the new concern are as follows: H. B. Larzelere, president and general manager; Walter D. Larzelere, vice-president; Walter Bassett Smith, treasurer; A. Hamilton Bishop, Secretary; M. H. Adams, sales manager and N. B. Ringler, superintendent.

The Nance Motor Car Co., has taken the stand that the Nance Six constitutes the degree of motor car value which the discriminating American public will soon exact from the automobile makers who desire to remain in the automobile business. The question has been asked them how they can make any money selling the Nance Car completely equipped, including top, at such a low price as $1900. The answer will be found in the conditions under which the Nance Six is constructed.



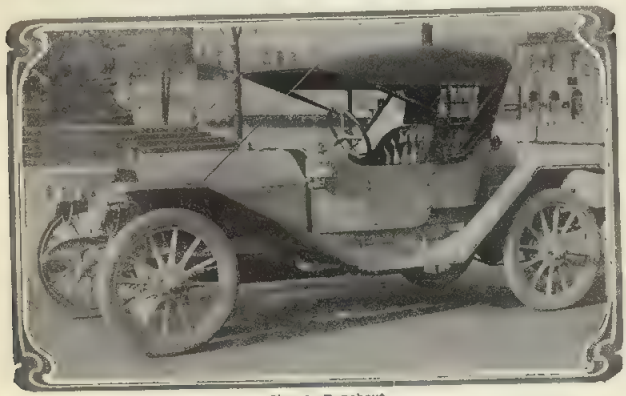
Front View of Nance Six.

Fig. 1. Attention is called to the very sturdy Elliot type front axle, and to the general neat appearance of the car. The steering arms and cross connecting link are well protected behind the front axle, there being a road clearance of 10 in.

The Nance Co. bases its operation on the belief that the automobile business can be conducted successfully in the same conservative manner and along the lines of other standard manufacturing. The enormous overhead expense, the excessively expensive advertising and methods of selling, it is believed can be dispensed with. While the Nance Company control the design and manufacture of the many small parts peculiar and individual to the Nance Six, they purchase the vital units and

more important parts from the various specialists, each under a guarantee as to accuracy and quality, which would be wholly impossible of attainment in any shop unless its entire time and attention were devoted to this one specialty. This means that the Nance Company believes that it can place on the market a better and more reliable car by using parts made by experts in their particular lines and whose entire time and energy have been spent in developing their specialty. At best an automobile maker can manufacture but a few of the parts, all agreeing that the tires, wheels, axles, frames, electrical apparatus, etc., can be much more satisfactorily made by specialists than they can make them themselves. Many of the best cars are those which are well and carefully designed, using the best that the market affords, and the Nance Six design and specifications are the result of years of experience of the department heads of the company, men who have been connected with the industry from its beginning and have learned the short-comings of the various machines, as well as of manufacturing and selling methods during what might be termed, an extravagant past. The company has available in fire-proof vaults all patterns for duplicating parts, thus safe-guarding purchasers in the matter of obtaining speedy shipments should the makers fail to fulfill their contracts. The lack of overhead expenses and extravagant advertising and sales methods make possible the marketing of the Nance car at a price almost one-half of that which has been asked for six cylinder machines of its class.

In the following description it will be noted that nothing enters into the construction that is not well known to be of the highest grade. The machines are made in runabout and five-passenger touring car types, both of the up-to-date fore dore construction, based on a standard chassis of 122 inch wheel base. These machines are sold at the price mentioned fully and completely equipped ready for long distance touring, including an excellent quality, Chase leather, or Pantasote top with full side curtains and top boot. The standard equipment in addition to the top includes quick detachable rims, Bosch magneto and battery in reserve, 10 inch lens mirror search lights, two side oil lamps, rear signal lamp, foot rest, robe rail, large bell horn, and complete tool kit, comprising wrenches, jack, pump and tire repair outfit.



Nance Runabout.

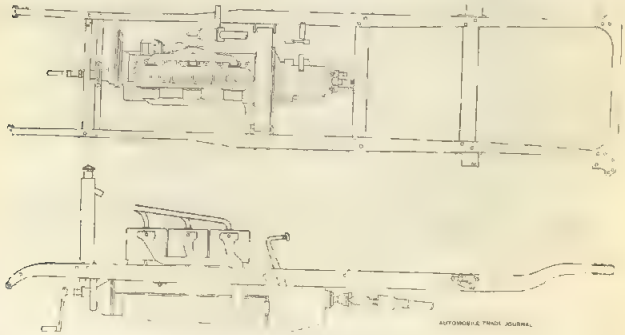
Fig. 2. This new six cylinder car with fore door body, racy type guards and gasoline tank arrangement is fitted with a six cylinder motor, 3⅝ by 4 1 16, developing 35 h p at 900 r. p. m. Transmission of power is through a multiple disc clutch, selective type three speed sliding gear, shaft drive to full floating rear axle. Fully equipped, including top and everything ready for the road $1900.

Unit Power Plant.

The power plant is of the unit type, mounted according to approved practice on a three point suspension. The motor is of special design being, it might be termed, a combination of the Brownell and Northway six cylinder engines. The cylinders are compactly cast, of the best grey iron, in pairs, and are superbly finished in hard baked grey enamel, making them very pleasing in appearance and so they can be readily cleaned by washing. Both valves are in the head operated by the usual vertical rods and rocker arms, but contrary to usual custom, these are nicely finished and nickel plated, giving a clean, neat appearance not often found even in the very highest priced cars.

The crank case, which is a substantial aluminum construction has integral arms extending toward the rear embracing the fly wheel, and to these is securely bolted corresponding arms integral with the three speed sliding gear case. These two arms provide two points of support for the motor unit assembly at the rear, being mounted on the frame side members. At the front the crank case rests at a single point on the forward cross frame member, thus giving the desired flexible three point mounting which insures absolute alignment of the motor crank shaft, clutch and change gear shafts. No binds or stress can be thrown upon these members by slight deviations in frame alignment due to negotiating the most uneven road surfaces. The motor cylinders have a bore of 3⅝ inches by 4 1-16, each pair of cylinders is rigidly held to the crank case by studs and castellated nuts. The drop forged steel six throw crank shaft is mounted in four liberal sized Parsons white bronze die cast bearings.

Lubrication is by force feed and splash insuring positive oiling of every moving part; a special method has been adopted for taking care of the overhead rockers, each pair of rocker arms being supplied with a central oil hole, the arms being drilled so that the oil is conducted not only to the two main bearings of the rockers, but outwardly to the four ends, so that one oiling takes care of these six points. The change speed mechanism, differential and floating rear axle, as well as the multiple disc clutch, operate in oil baths.



Partial Plan of Nance Chassis.

Fig. 3. This view shows the unit power plant construction, there being two points of support at the rear and one at the front, the change speed gear case is carried by integral arms extending from the engine crank case. It also shows the well gusseted hot riveted frame, it will be noticed that at the offset of the side frame members the top and bottom flanges are increased in width, giving additional strength. The top and bottom flanges of the rear cross frame members project beyond the frame forming a support for the ¾ elliptic rear springs.

Cooling.

The motor is efficiently water cooled by means of a gear pump; a Long Manufacturing Company's honey-comb radiator, which is ingeniously mounted on a flexible support so that no possible weaving or motion of the frame can cause it to leak. An efficient ball bearing, aluminum fan substantially mounted and flat belt driven aids in cooling. All connections are by extra heavy hose. It will be noted that the honey-comb type of radiator is ordinarily used only on high priced cars and is another evidence of the quality being supplied in the Nance Six. The area in this radiator is such that over heating is claimed to be an impossibility.

The well-known Stromberg careburetor, which needs no description, is employed, and is water jacketed, insuring proper vaporization of the fuel during cold weather. This carburetor is located on the right side of the engine and flange connected to a neat Y aluminum cast intake manifold. In the runabout, a large 27 gallon, heavy pressed steel tank is provided for the fuel, and in raceabout style, is placed in the rear of the front seat. In the touring car the gasoline is carried as usual in a suitable tank under the front seats the feed being by gravity to the carburetor.

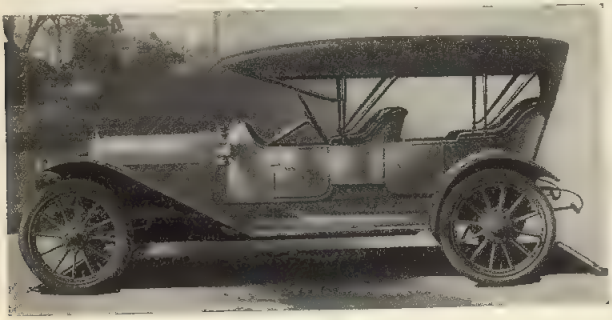
Dual Ignition.

The ignition is by the latest Bosch dual system with battery in reserve, a single set of plugs being used in the sides of the cylinders. The advantages of the Bosch dual system, such as the push button start on the spark, fewness of parts, neatness of appearance on the dash, accessibility, etc.,

are too well known to need further discussion. The batteries evidently will not be used to any great extent as the engine will start on a turn of the crank on the magneto alone.

The Multiple Disc Clutch.

An all steel multiple disc clutch is neatly housed in the fly wheel, the discs running in oil, the rear of the clutch housing being open to the transmission case. This clutch has no connection whatever to the crank shaft is housed in an aluminum case supported directly from the engine base. Operation is selective by a swing lever of neat design as shown in the accompanying drawing, Fig. 7. When the upper portion is swung outward it picks up the low and reverse gear shift arms at the quadrant, thus doing away with the uncertainty of the gear shift pick-up arm as sometimes met with when this arm is located at the transmission some distance from the gear lever; when swung to



Nance Touring Car.

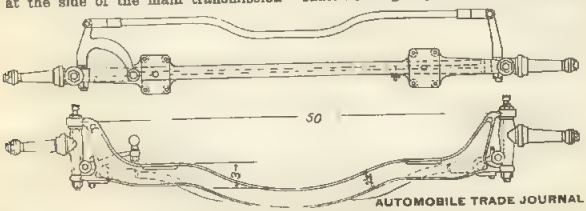
Fig. 4. This model uses the same chassis as the runabout, wheel base is 122 in., wheels 34, the fore door body is of the latest approved design, showing originality in its lines, is of aluminum and upholstered in hand buffed leather, dash is cowled and the mud guards and splash aprons are arranged to give maximum cleanliness to the occupants. The six cylinder motor is finished in grey enamel and valve push rods and overhead rocker arms nickel plated, giving a neat and cleanly appearance under the hood. With complete equipment including top the price is $1900.

case and is of the self contained type, that it engages with a backward motion so that all thrusts while engaged are taken by the housing, ball thrusts being employed and no thrust whatever is transmitted to the engine shaft. This clutch is operated in the usual well-known manner by the left pedal.

Sliding Change Gear.

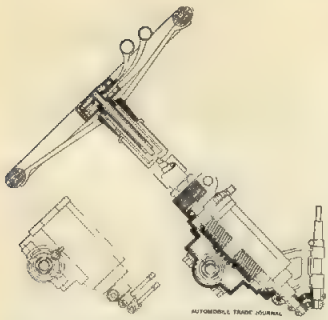
A very compact three speed and one reverse sliding change gear with the countershaft at the side of the main transmission the left or inward it engages the high or intermediate. The brake lever as shown is outside of the fore door yet in an accessible position, the front seats being low. The gears are of chrome nickel steel of wide face, and the direct drive ratio with 34 inch diameter wheels is 3.4 to 1.

The drive is by a shaft which under normal load is practically horizontal, producing the much desired straight line transmission of power. The forward end of the propeller shaft housing is joined to a substantial cen-



Front Axle of the Nance Six.

Fig. 5. This axle is a one piece drop forging of I-section, very much heavier than usually used in cars of such light weight as 2400 or 2500 pounds. The spring seats are forged integrally.



Nance Steering Gear.

Fig. 6. This steering gear consists of a double nut of chrome nickel steel, which allows of a take up for wear; the outside is cut to form a rack which in turn engages a spur sector operating the steering arm. The whole is enclosed in a substantial housing bolted directly to the side frame members and is packed with lubricant.

tral cross frame member by a cast steel yoke which is not only pivoted to this cross frame member, but is also slidably attached. Following correct design the axis on which this housing pivots is coincident with the axis of the single universal joint at the forward end of the propeller shaft, so that no undue strain is thrown on any of the parts due to the motion of the springs.

Full Floating Rear Axle.

The rear axle is of the full floating type, fitted with Hyatt roller bearings and New Departure ball thrust, two Hyatt roller bearings one at each end support the live shafts which drive the heavy artillery wheels by means of hub clutches, so that these members transmit torque only and are not called upon to carry any of the dead weight of the car. The driving shaft is mounted on a long Hyatt roller bearing and fitted with ball thrusts of New Departure construction. The differential is a substantial bevel gear construction housed in a neat case which forms the center of the rear axle housing, tubing forced in, pinned and brazed in position constituting the outer ends. This housing carries the Hyatt roller bearings upon which the rear wheels run. The axle is well trussed and a noticeable feature of the car is the fact that both of the axles are of much heavier weight than it is customary to use on machines of such total light weight. These two axles weigh 325 lbs., the front one being an Elliot type drop forging in one piece with integral spring seats; this member, although cranked at the center, gives full 10 inches road clearance.

Brakes.

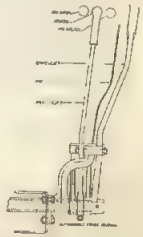
The Nance car is liberally supplied in the matter of brakes, the internal and external rear wheel brakes, giving a total braking surface of 300 sq. in. These brakes operate on pressed steel drums bolted through the 1½ inch diameter spokes, there being no brakes of any kind on the transmission to throw extra stresses upon this member. The internal expanding brake consists of cast iron shoes operating against the steel drum, the external contracting brake is raybestos faced; the inside brake is operated by the foot lever being the service brake and is compensated, the eveners being fitted at each end with small turn buckles so that the single tree bar can be kept at right angles to the main brake pull bar which is also fitted with a turn buckle for adjustment. However, these adjustments are rarely necessary owing to the very large braking surface provided.

Springs.

The front springs are semi-elliptic, with seven leaves 1¾ inches in width, and 37½ inches from spring eye to spring eye. The rear springs are ¾ elliptic with scroll ends, the lower port having 8 leaves 43½ inches long and the upper 6 leaves 19½ inches long. All leaves are 2 inches wide and both front and rear springs are banded. The upper and lower flanges of the rear cross frame member extend beyond the frame forming a support for the spring which is slipped to and through these extensions. All spring eyes are fitted with grease cups at the end of the bolts and with an oil hide at the top so the grease can be softened up occasionally if desired.

Frame.

Heavy cold pressed channel section steel with all cross members and gusset plates hot riveted, form the substantial frame of the Nance Six. The side members at their forward ends are inswept or bottle necked to facilitate turning in restricted quarters The rear of the frame is upswept over the rear axle thus providing a low center of gravity and yet room for ample spring vibration. In addition to the heavy gusset plates the frame is further stiffened by



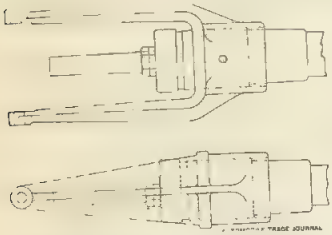
Gear Shift and Brake Lever.

Fig. 7. The gear shift lever as shown is of the swing type picking up at its base the gear shift arm, the various positions for high, intermediate and low being shown in the illustration. This lever is on the inside of the fore door while the brake lever is on the outside.

carrying to the rear of the offset in the side frame members the widened top and bottom flanges of the frame sills.

Control.

The steering gear is of the sector and double nut type as shown in Fig. 6. These parts are of Chrome nickel steel strongly housed and supported directly to the frame



Yoke Support of Torsion Tube.

Fig. 9. The straight line drive shaft is a closed torsion tube, the forward end of which is slidably mounted in the yoke shown. This yoke surrounds the universal joint and is pivoted to a cross frame member so that its axis coincides with that of the universal joint.

side member. The double nut is adjustable to wear and has cut into its exterior surface a rack which engages a gear sector operating the steering arm. The steering column is 1¾ inches in diameter, topped by an 18 inch diameter hard rubber covered hand wheel with its internal rim notched for finger grip. The post is at an angle of 30 degrees and the spark and throttle levers are friction retained at its top, these members being absolutely silent in operation. An auxiliary or accelerator pedal is provided close to the foot brake pedal. It is claimed that this steering gear is absolutely irreversible and that no shock whatever can possibly reach the steering wheel. The tie link is protected by being placed at the rear of the front axle as shown in the front view of the car.

Bodies.

The Nance bodies are from the factory of a high grade body builder who has worked out very successfully the design submitted, as can be seen by a glance at the accompanying photographs. These bodies are of the fore door type providing the maxim of comfort for the occupants and at the same time show a symmetry of form which is very pleasing. The upholstering is of heavy hand buffed leather and ranks with that of any of the highest priced machines. The finish is also up to standard and is guaranteed to be first class in every respect. The metal bodies being of sheet metal on staunch hard wood frames are unusually light yet strong. The mud guards as shown are of the racy type with visored ends which prevent unnecessary splashing. Running boards are extremely short serving simply as a step and connection for the front and rear guards.

The small details which distinguish the high grade car such as attention at every possible point to methods of lubrication, the universal locking of adjustments and the use of tested materials give the Nance at once a prominent place in the automobile world.

New Moline Fore Door Model.

This new model differs from the other cars principally in the body. This is of the latest fore door design, making the 1911 Moline line complete. The motor is of long stroke type, 4 cylinders cast in pairs, 4x6 inches, rated 36 h. p. Ignition by two independent systems, using magneto. Wheel base, 112 inches, 36-inch diameter wheels, with 3½-inch tires. Cooling by thermo-syphon system.

The New York Shows always bring to light many new and interesting novelties—to get the right perspective of the whole, and the opinions of experts upon the new things, read our next number. A detailed review of the New York Shows, written by our staff of automobile experts, will make this a notable issue, and a forecast of the Chicago Show will add to the timeliness of the February JOURNAL. Order yours now!

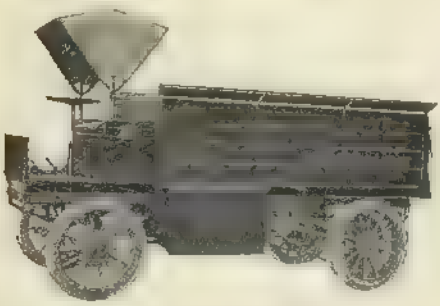
Electric Commercial Cars

General Electric Commercial Cars.

Made by the General Vehicle Co., Long Island City, N. Y.

GENERAL VEHICLE 1000 LB. DELIVERY VEHICLE.
Wheel base 81 in., two motor, chain drive from jack shaft to rear wheels, wheels artillery type, solid rubber tires, one set of brakes, semi-elliptic springs front and rear.

GENERAL VEHICLE 2000 LB. VEHICLE.
Wheel base 102 in. Other chassis details the same as the 1000 lb. truck.



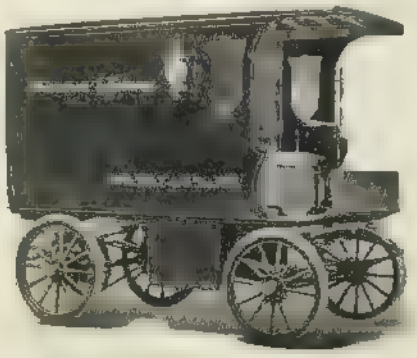
GENERAL VEHICLE TWO TON TRUCK.
Wheel base 111½ in. Other chassis details the same as the 1000 lb. truck.

GENERAL VEHICLE 3½ TON TRUCK.
Wheel base 126 in. Other chassis details the same as the 1000 lb. truck.

GENERAL VEHICLE 5 TON TRUCK.
Wheel base 188 in. (except the beer truck, which is 130 in.). Other chassis details the same as the 1000 lb. truck.

Ward Electric Commercial Cars.

Made by Ward Motor Vehicle Co., New York City.



WARD TYPE ONE, $1,600 to $1,800.
Eight hundred pound delivery wagon. Single motor, Standard roller or silent chain drive to sprocket on live rear axle, continuous torque controller, battery 42 cells, medium or high capacity type plates; two contracting sets of brakes; springs full-elliptic front, platform rear, tires 32 x 2½ front and rear. Equipment, lamps, cushions, speedometer, odometer, tool kit.

WARD TYPE FOUR, $3,500 to $3,700.
Two motors, silent chain drive from countershaft to rear wheels; battery 42 cells, medium or high capacity type plates; tires 34 x 4 front, 34 x 3 dual rear; springs platform, front and rear, two sets of brakes contracting. Equipment, complete.

WARD TYPE TWO-A, $2,100 to $2,300.
1300 lb. delivery wagon. Chassis details the same as Motor One.

WARD TYPE TWO, $2,500 to $2,700.
2000 lb. delivery wagon. Tires 34 x 3½ front and rear; springs platform front and rear. Other chassis details the same as Type One.

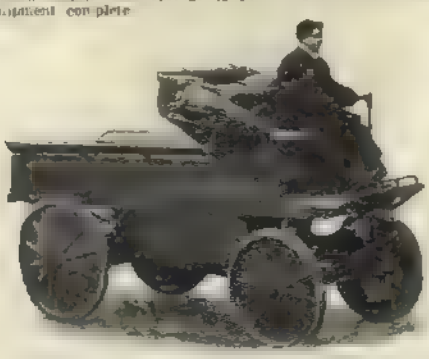
WARD TYPE THREE, $3,000 to $3,200.
3400 lb. delivery wagon. Tires 34 x 4 front and rear; two motors, springs platform front and rear. Other chassis details the same as Type One.

Walker Electric Commercial Cars.

Made by the Automobile Maintenance & Mfg. Co., Chicago.

WALKER MODEL F ELECTRIC TRUCK.

700 lb. capacity. Price varies with battery used. Westinghouse motor fully enclosed; Exide or Edison battery, 43 cells lead or 60 Edison. Westinghouse controller four speeds forward. Walker balance drive to both rear wheels; two sets of brakes expanding and contracting on the rear wheels, tires solid 32 x 2½, steel channel rims, lever or wheel steering gear; frame of structural steel; front springs inverted elliptic rear springs ½ platform; wheel base 78 in. Equipment complete.



WALKER MODEL C, 1500 LB. TRUCK.

Price varies with battery used. Front tires 34 x 2, rear tires 36 x 3. Other details the same as Model F.

WALKER MODEL B, 3000 LB. TRUCK.

Price varies with battery used. Front tires 36 x 3½, rear 42 x 3½. Other details the same as for Model F.

WALKER MODEL D, 4000 LB. TRUCK.

Price varies with battery used. Tires 36 x 4, front and rear. Other details the same as Model F.

WALKER MODEL E, 5000 LB. TRUCK.

Price varies with battery used. Front wheels 36 x 5, rear wheels 36 x 3½ dual. Other details the same as Model F.

American Electric Commercial Cars.

Made by the American Motor Truck Co., Lockport, N. Y.

AMERICAN MODEL B, $3,750.

Stake platform, capacity 3½ tons; maximum speed 8 miles per hour; two Westinghouse motors, located one in front of each rear wheel, suspended from the frame, capacity for 25 per cent. overload; 42 cell National battery; weight 1,850 lbs., rated 80 volts, 30 to 80 amperes. Westinghouse controller, giving four speeds forward and reverse; drive by chain; two sets of brakes expanding and contracting on the counter shaft and rear wheels; front tires solid [illegible] x 5 rear twin solid, 36 x 4; steering wheel at the right; frame of armored wood; front springs, half-platform, rear springs, full platform; wheel base 120 in. Equipment of lamps, bell, tools, speedometer and ammeter.

Waverley Electric Commercial Cars.

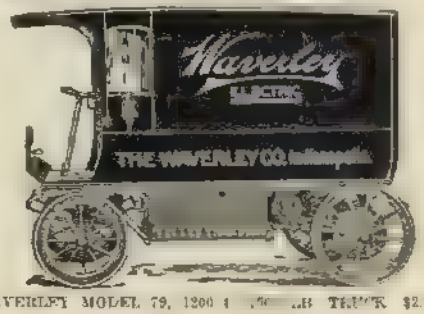
Made by the Waverley Company, Indianapolis, Ind.

WAVERLEY HEARSE, $4,000.

Four passengers. Front wheels 32 x 3, rear wheels 36 x 3; wheel base 97½ inches. Other chassis details the same as Model 31.

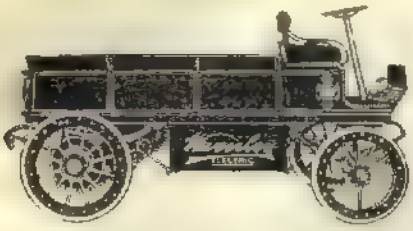
WAVERLEY MODEL 83 TRUCK, $[illegible]

Capacity 600 to 1000 lbs., closed delivery truck. Waverley motor located in rear; Exide, Waverley or Edison battery, 24 cells Waverley controller, four speeds forward; two sets of brakes expanding and contracting upon two foot front and rear tires solid, 32 x 2½; all wheel bearings ball; steering wheel, left; springs full elliptic; cross wheel base 87 inches.



WAVERLEY MODEL 79, 1200 [illegible] TRUCK, $2,250.

Closed delivery [illegible]. Front tires 32 x 3, rear tires 36 x 3, wheel base 97½ inches. Other chassis details the same as Model 33.



WAVERLEY MODEL 80, 1200 to 1500 LB. DELIVERY TRUCK, $2,150.

Open delivery truck. Front tires 32 x 3, rear tires 36 x 3, front springs semi elliptic, rear springs full elliptic; wheel base 97½ inches. Other chassis details the same as Model 83.

WAVERLEY MODEL 85, 2000 to 2500 LB. TRUCK, $3,400.

Closed delivery truck. Front tires 34 x 3½, rear 36 x [illegible] semi elliptic rear, full elliptic, other details of chassis the same as Model 83.

WAVERLEY MODEL 86, 2000 to 2500 LB. TRUCK, $3,250.

Platform stake truck. 44 cell battery, front tires 32 x 3½, rear 36 x [illegible], front springs semi-elliptic; rear springs full elliptic; wheel base 97½ inches. Other chassis details the same as Model [illegible].

WAVERLEY FURNITURE WAGON.

2000 to 2300 lb. capacity open delivery truck, 48 cells batteries, front tires 32 x 3½, rear tires 36 x 3½; front springs semi-elliptic; rear springs full elliptic, wheel base 97½ inches. Other chassis details the same as Model 83.

Washington Electric Commercial Vehicles.

Made by Washington Motor Vehicle Co., Washington, D. C.

CAPITOL 1000 LB. TRUCK, $1,600.

Edison battery, chain drive from motor to jack shaft and from jack shaft to sprocket on rear wheel; two sets of brakes operating on rear wheels, solid tires; steering tiller at the left.

CAPITOL 2400 LB. TRUCK, $2,300.

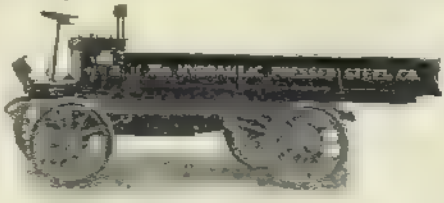
Chassis details the same as the 1000 lb. truck.

Baker Electric Commercial Cars.

Made by the Baker Motor Vehicle Co., Cleveland, Ohio.

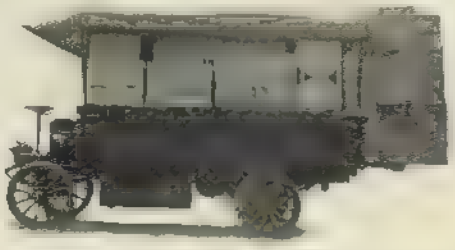
BAKER MODEL X, $2,250.

Panel body, capacity ½ ton. Motor, series wound, hung on tubular bar across frame in front of rear axle, capacity for 300 per cent. overload; 42 cell Exide battery; weight 1050 lbs., 84 volts, 24 amperes, for four hours; continuous torque type controller, giving five speeds forward and three reverse; drive by double chain; one set of brakes expanding on the rear wheels; tires solid, 34 x 3; steering wheel at the left; frame of pressed steel; springs, semi-elliptic, front and rear; wheel base 85 in. Full equipment of lamps, tools, bell and rain apron.



BAKER MODEL O, $2,650.

Express body. Capacity for one ton, battery weight 1250 lbs., 84 volts, 38 amperes; tires may be either solid or pneumatic, 34 x 3½; wheel base 92 in. Other chassis details are the same as Model X.

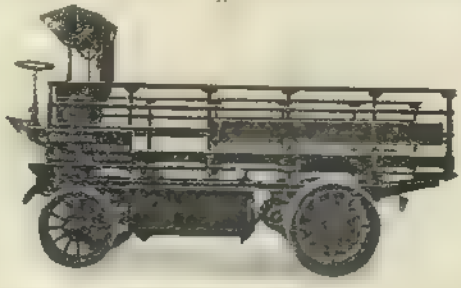


BAKER MODEL U, $2,[illegible].

Express body, capacity for [illegible] lbs., battery weight 1800 lbs., 84 volts, 42 amperes, front tires [illegible] x 4, rear twin solid 3½ x 2½, wheel base 120 in. Other chassis details same as Model X.

Studebaker Electric Commercial Cars.

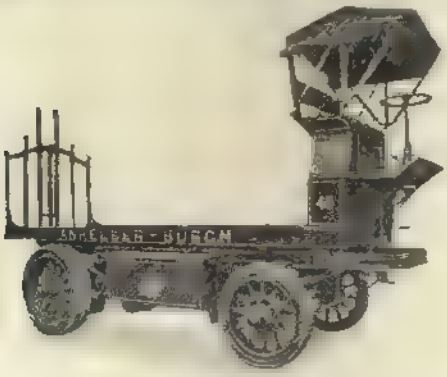
Made by the Studebaker Automobile Company, South Bend, Ind.



STUDEBAKER MODEL 23.

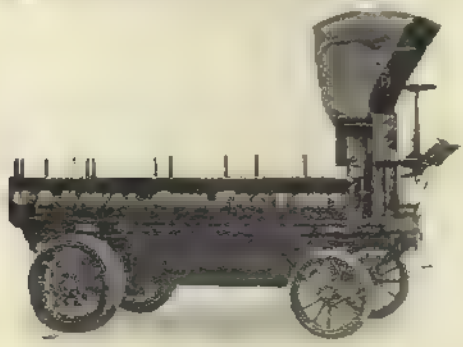
Double equipment of Westinghouse 38 volt motors; capacity for 300 per cent. overload, suspended from horizontal bar

parallel with axle; Westinghouse type controller giving four speeds; battery equipment 44 cells, 17 M. V Exide, of 17 K. W hours or [illegible] ampere hours capacity, other battery equipments of varying rates of discharge may be had if desired. Two sets of brakes expanding and contracting on the rear wheels and motor countershaft; front tires 36 x 6 single, rear 42 x 6 double, frame of rolled angle steel, springs, front and rear, semi-elliptic wheel base 113½ in. Full equipment of tools and spare parts.



STUDEBAKER MODEL 24

Motor equipment same as Model 23. Battery equipment, 44 cells, 19 M. V Exide [illegible] K. W hours or 253 ampere hours discharging at the rate of 63 amperes per hour, wheel base 111½ in., tires 36 x 7 front, 42 x 6 rear. Other chassis details are the same as Model 23.

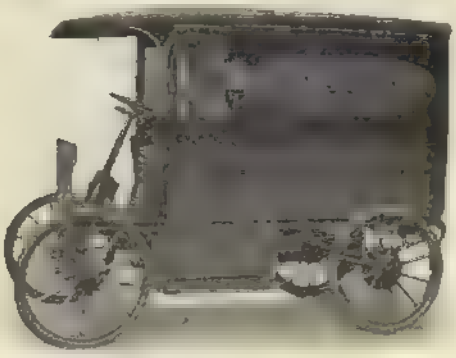


STUDEBAKER MODEL 23.

Battery equipment 44 cells, 15 M. V Exide [illegible] K. W hours or 196 ampere hours, discharging at the rate of 49 amperes per hour, wheel base 113½ in. Other chassis details the same as Model 24.

Commercial Electric Commercial Cars.

Made by the Commercial Truck Co., Philadelphia, Pa.



COMMERCIAL 500 POUND WAGON, $1,900.

Panel or express bodies may be had. Motor, General Electric, 16 amperes, 85 volts, capacity, 50 per cent. overload; 42 cells of lead battery, weight, 1,000 pounds, controlling torque controller around steering column, giving four speeds forward and three reverse. The drive is by shaft; tires, solid, 36 x 2 front; 36 x 2½ rear; frame of structural steel, front springs ¾ elliptic, rear, semi-elliptic, wheel base 85 in. Drive is by Handley spiral gear, with motor, gearing, axle, wheels, etc., in one unit.

COMMERCIAL 3½ TON EXPRESS, $4,[illegible]

3½ ton express body. Closed panel may also be had. Motor, General Electric, 16 amperes, 85 volts, bolted to wheel spindle, capacity for 50 per cent. overload, 42 cells of lead battery, weight 2,700 pounds, wheel base 115 in. Other chassis details are the same as the 2-ton truck.

COMMERCIAL 5-TON EXPRESS, $5,000

Five-ton express body. Battery weight, 3,000 pounds, tires, dual solid, front and rear, 36 x 4" drive is by all four wheels, individual motor for each wheel; wheel base 132 in. Other chassis details are the same as the 2-ton truck.

COMMERCIAL 2-TON EXPRESS, $3,[illegible]

Two-ton express body; station 'bus may also be had. Two General Electric motors, bolted to wheel spindles, 22 amperes, 85 volts, with capacity for 50 per cent. overload; 42 cells of lead battery weight 2,200 pounds, controlling torque controller around steering column, giving four speeds forward, and two reverse, drive by planetary spur gear; two sets of brakes, expanding on the rear wheels, tires, solid, 36 x 5 single front; 36 x 3½ dual rear, steering wheel at the left, frame of structural steel, front and rear springs semi-[illegible].

COMMERCIAL 1,000 POUND EXPRESS, $2,[illegible]

General Electric motor, 22 amperes, 85 volts, battery weight, 1,175 pounds, wheel base 96 in. Other chassis details the same as the 500 pound express.

COMMERCIAL 2000 POUND EXPRESS, $3,800

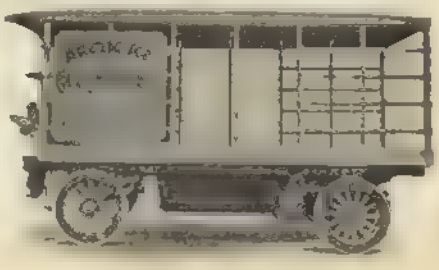
Motor, General Electric, 35 amperes, 85 volts, battery weight, 1,650 pounds. Tires, solid, 36 x 2½ front, 36 x 4 rear, wheel base 100 in. Other chassis details the same as the 500 pound wagon.

Atterbury Electric Commercial Cars.

Made by the Atterbury Motor Car Co., Buffalo, N. Y.

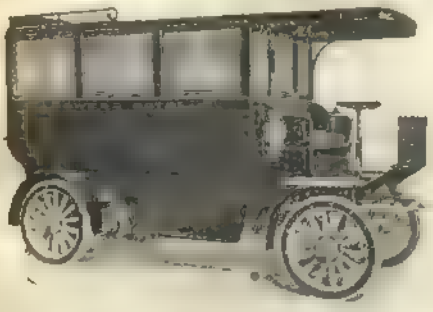
ATTERBURY MODEL B, $[illegible]

One ton electric truck. Two Westinghouse motors, 36 volts, located in front of rear wheels, 42 cells national battery, chain drive rear axle load, one set of brakes expanding on rear wheels, tires 36 x 3½ solid, steering wheel on right, springs semi-elliptic front and rear, wheel base 110 in. equipment, side, tail lamp, horn and tool.



ATTERBURY MODEL S. $4,500.

15,000 lb. truck. Two Westinghouse motors, 80 volts, two sets of brakes expanding and contracting, one on jack shaft, other on rear wheels; front wheels 36 x 5, rear 38 x 6; dual frame [illegible] steel, springs semi-elliptic; wheel base 125 inches. Other chassis details the same as Model R.



ATTERBURY MODEL F, 16 PASSENGER 'BUS, $8,500.

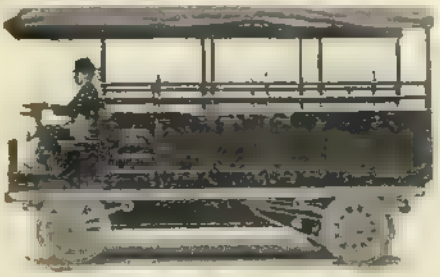
Front wheels 3½ x 36, rear wheels 4 x [illegible]; wheel base 120 inches. Other chassis details the same as Model R.

Lansden Electric Commercial Cars.

Made by the Lansden Co., Newark, N. J.

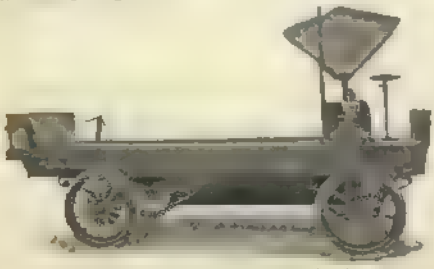
LANSDEN 3000 LB. WAGON, $ [illegible]50.

Wheel base 100 inches, other details are the same as the Light Delivery Wagon.



LANSDEN 4000 LB. CAR, $3,450.

Wheel base 112 inches; other chassis details same as the Light Delivery Wagon.

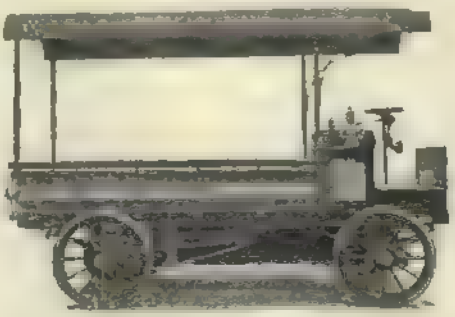


LANSDEN 5000 LB. WAGON, $4,020.

Wheel base 124 inches; other details are the same as Light Delivery Wagon.

LANSDEN LIGHT DELIVERY CAR, $2,450.

Panel body, capacity 2000 lbs.; motor, 7.2 h. p.; battery, 80 cells, Edison; drive by chain, with three speeds; one set of brakes expanding on the rear wheels, steering wheel at the left; frame of armored wood, springs front and rear, semi-elliptic; wheel base 88 inches; equipment of lamps, odometer, tools, ampere hour meter.

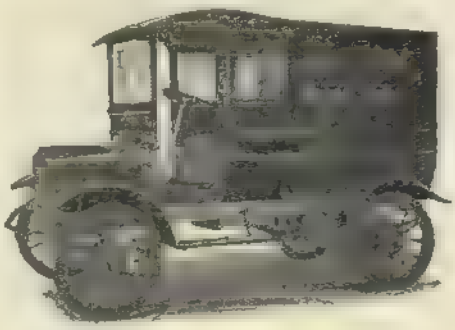


LANSDEN ONE TON TRUCK.

Wheel base 100 inches; other chassis details are the same as the Light Delivery Wagon.

Phipps-Grinnell Electric Commercial Cars.

Made by Phipps Grinnell Auto Co., Detroit, Mich.

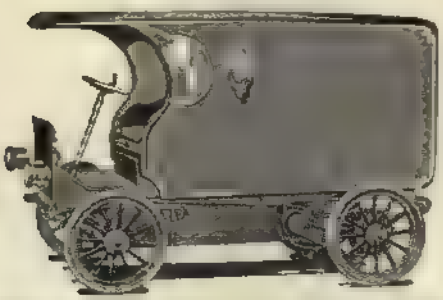


PHIPPS-GRINNELL 800 LB. DELIVERY WAGON.

Panel body delivery wagon, horseless chain in oil drive, foot pedal reverse, cushion solid tires front and rear, steering wheel to the right.

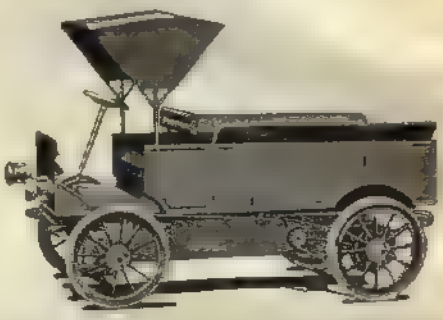
Detroit Electric Commercial Vehicles.

Made by Anderson Electric Car Co., Detroit, Mich.



MODEL 601. PANEL BODY 1000 LB. DELIVERY WAGON, $1,500.

Speed 14 m. p. h., mileage 50-60 miles. Motors suspended from frame; double side chain drive to sprockets on rear wheels (also furnished as 2000 lb. truck $1,400, and 3000 lb. truck, $1,650, chassis only).



MODEL 602 EXPRESS BODY 1,000 LB. DRAY $1,300

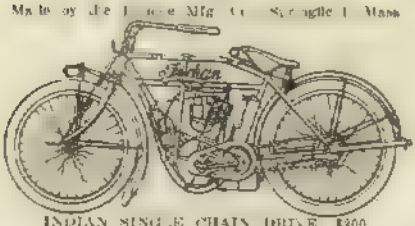
Chassis details same as Model 601. Other sizes also supplied as described under Model 601.

Eleventh Annual Motorcycle Review

Comprising all 1911 Models of all Motorcycles on the American Market for the current year

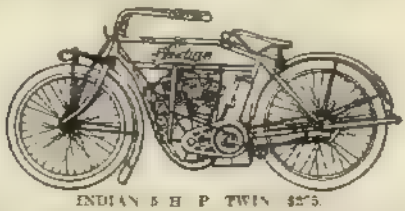
Indian Motorcycles.

Made by the Indian Mfg. Co., Springfield, Mass.



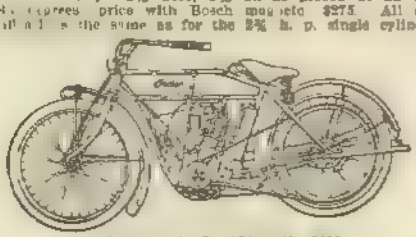
INDIAN SINGLE CHAIN DRIVE $200

Motor single cylinder, 2¾ h. p., 2¾ in. bore, 3¼ in. stroke, placed in inclined position and fitted with free engine clutch; frame has 1 in. drop at 11½ in. reinforced tubing; rear fork has coil springs; front fork has grip control. Hassler shock absorber. Corbin brakes. Messinger engine saddle, two gallon gasoline tank, 2 qt. oil. 53 in. wheel base. G. & J. rims, automatic mechanical oil pump; price $200 with magneto, $225 with magneto.



INDIAN 5 H. P. TWIN $275.

Motor 5 h. p., 2⅜ bore, 3½ stroke placed at an angle of 45 degrees; price with Bosch magneto $275. All other specifications the same as for the 2¾ h. p. single cylinder.



INDIAN 4 H. P. SINGLE, $225

Motor 4 h. p., 3¼ in. bore and 3 43-64 in. stroke; chain drive; battery ignition $225, magneto $25 extra; two speed gear with free engine clutch $50 additional. All other specifications same as for the 2¾ h. p. single cylinder. This model is also made with belt drive at the same price as for chain.

INDIAN 7 H. P. TWIN

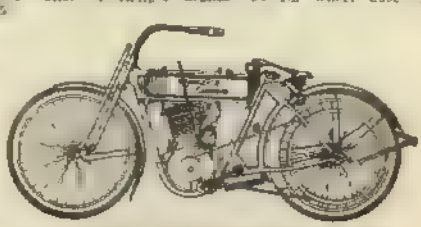
Motor, 7 h. p., 3¼ in. bore, 3 43-64 in. stroke, placed at a 42 degree angle, price $300; two speed gear with free engine clutch $50 extra. All other specifications same as for the 2¾ h. p. single.

Harley-Davidson Motorcycles.

Made by the Harley Davidson Motor Co., Milwaukee, Wis.

HARLEY DAVIDSON MODEL 7 SINGLE $225.

Motor 7 h. p., motor, 3 5 16 in. bore 3½ in. stroke inclined forward in looped frame; free engine idler pulley; cushion front fork; double grip control; Schebler carburetor; semi automatic valve lifting system. Troxel or Messinger saddle. Thor or Eclipse brakes; 55 in. wheel base; price $225.



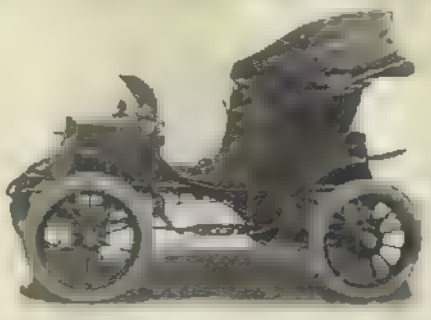
HARLEY DAVIDSON MODEL 7 A $250.

Model 7 A is the same as Model 7, but is equipped with Bosch magneto and sells for $250.

Electric Pleasure Cars

Columbia Electric Cars.

Manufactured by the Columbia Motor Car Co., Hartford, Conn.



COLUMBIA MARK 70 LOT 2 VICTORIA, $1,600

Two passenger victoria body. General Electric motor hung from body, forward of rear axle; 300 per cent. overload capacity; 24 cells of Exide battery; weight, 750 lbs; rated at 48 volts, 144 ampere hours, General Electric continuous torque controller giving 6 speeds forward and three reverse, drive by chain, two sets of brakes contracting on the rear wheels and motor, tires, pneumatic, 30 x 3½ on Universal rims steering lever at the left; frame of armored wood' springs, front and rear semi-elliptic; wheel base 70 in Full equipment of voltammeter, with lamp, side and tail lamps and horn

COLUMBIA MARK 67 BROUGHAM, $ 500

Five passenger brougham illustrated. Limousine, Victoria and Hansom bodies may also be had. Motor, General Electric mounted on the rear axle; 44 cells Exide battery; weight lbs.; rated at 88 volts, 168 ampere hours, General Electric continuous torque controller giving five speeds forward and three reverse drive by double helical gear; rear wheels, ¾ platform, wheel base 86 in Other chassis details the same as the Victoria

Ideal Electric Cars.

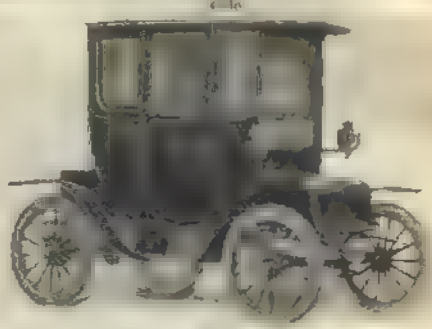
Made by the Ideal Electric Company, Chicago, Ill

IDEAL BROUGHAM, $

Four passenger brougham [illegible] lbs [illegible] per hour. The chassis [illegible] tered, capacity [illegible] tery. Westinghouse [illegible] and two reverse [illegible] chain, two sets of [illegible] ing and contracting on the rear wheels [illegible] tires, solid front and rear, steering arm at the left; frame of pressed steel; front springs, semi-elliptic rear ¾ elliptic wheel base, 92 in

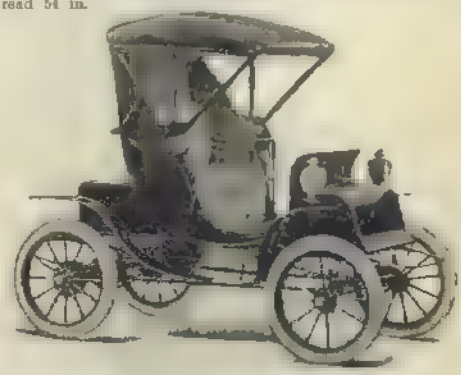
Fritchle Electric Cars.

Manufactured by the Fritchle Automobile & Battery Co., Denver, Colo.



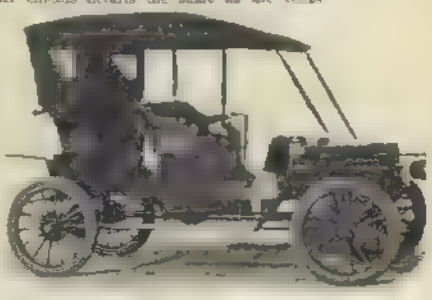
FRITCHLE COUPE, $3 [illegible]

Four passenger coupe maximum speed 22 miles per hour Motor, compound, hanging from body 300 per cent. overload, 32 cell Fritchle battery, weight 900 lbs.; knife switch controller giving five speeds forward and three reverse; drive may be by either shaft or chain; two sets of brakes, contracting on the rear wheels, tires pneumatic, 34 x 3½ on Q. D. rims steering tiller at the right, frame of armored wood, springs full elliptic, front and rear; wheel base 86 in., tread 54 in.



FRITCHLE VICTORIA, $2 [illegible]

Two passenger victoria maximum [illegible] 25 miles per hour [illegible] weight 800 lbs wheel base 84 in. other chassis details the same as the coupe



FRITCHLE ROADSTER, $2,400

Four passenger roadster body, maximum speed 30 miles per hour. Knife switch controller giving 8 speeds forward and 4 reverse, wheel base 100 in. Other chassis details the same as the coupe

Broc Electric Cars

Made by The Broc Electric Vehicle Co., Cleveland, Ohio.

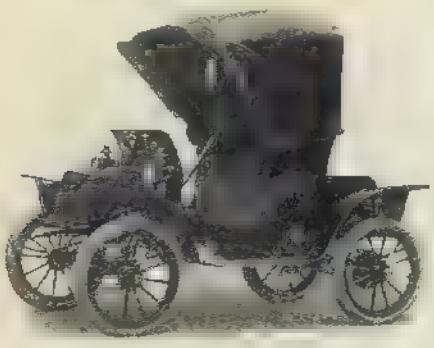
[illegible] 25 miles an [illegible] Compound [illegible] rear [illegible] Exide [illegible] cell, battery of 36 cells [illegible] from [illegible] ; weight 800-900 lbs.; 60 [illegible] ampere hours; drum type controller giving five speeds forward and reverse, drive by shaft, or by silent

BROC MODEL 25 COUPE, $2,700

and double chains; two sets of brakes expanding on the rear wheels, contracting on the motor shaft, tires pneumatic, 32 x 4 front and rear, on Q. D. rims, steering gear at the left; frame of pressed steel, front springs, semi-elliptic; rear, full-elliptic, wheel base 83 in. Full equipment of horn, lamps, meter, chains, gear and tools, with mirror, memo book, parcel carrier and dome lamps. This is the standard chassis of the Broc Company, and upon it may be mounted Roadster, Stanhope, Victoria and three styles of Coupe bodies.

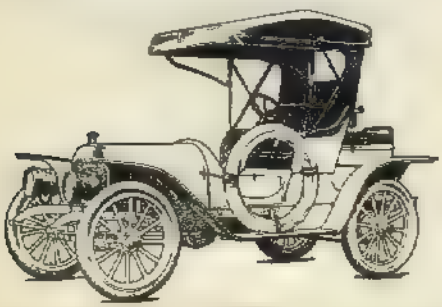
Babcock Electric Cars.

Made by the Babcock Electric Carriage Co., of Buffalo, N. Y.



BABCOCK MODEL 6 VICTORIA, $900.

Two passenger Victoria body. Motor, series I., located in the centre, 300 per cent. overload; 36 cells of Philadelphia battery; 72 volts, 100 ampere hours; weight, 700 pounds; drum type controller, giving five speeds and one reverse; drive by double chains; three sets of brakes, two on rear wheels and one on jack shaft; tires, pneumatic, 32 x 3½ on Q. D. rims; steering wheel at the left, frame of armored wood, front springs platform, rear springs, full elliptic; wheel base, 78 in. Full equipment of speedometer, clock, volt ammeter, ampere-hour meter, safety lock and tools



BABCOCK ROADSTER, $3,400.

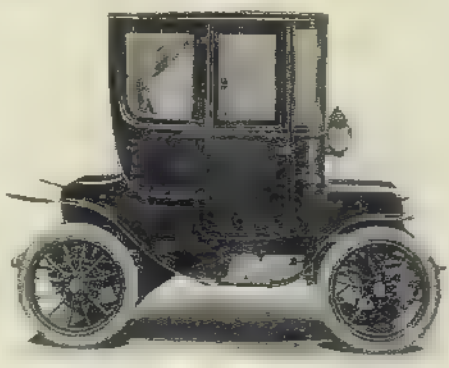
Three passenger coupe body may also be had. Maximum speed, 35 miles per hour; series wound motor, 300 per cent. overload, 42 cells Philadelphia battery, 84 volts, 120 ampere hours, weight, 975 pounds; tires, 34 x 4 pneumatic; wheel base, 84 in. Other chassis details the same as Model 6.

BABCOCK MODEL 14 COUPE, $3,600

Battery weight, 852 pounds; tires, 32 x 4; wheel base, 86 in. Other details the same as Model 6.

Dayton Electric Cars.

Made by the Dayton Electric Car Co., Dayton, Ohio



DAYTON MODEL 101 COUPE, $2,500.

Four passenger coupe. Maximum speed 20 miles per hour. Motor, series wound; capacity for 300 per cent. overload, located under center of body, 28 cells, Exide battery, 300 lb.; rated at 48 volts; controller gives six speeds forward, three reverse, drive is by double chain; two sets of brakes expanding on the rear wheels and jack shaft; tires pneumatic, on Q. D. rims; steering wheel at the left, tubular frame front springs platform, rear full elliptic; wheel base 80 in. The following bodies may also be had: Two or three passenger Coupe $2,300; two or three passenger Victoria, $2,000 and two or three passenger Stanhope, $1,900. A four passenger coupe may be had upon the same chassis, except that the wheel base is 86 in.

Bailey Electric Car.

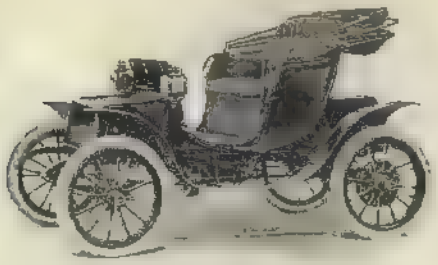
Made by S. R. Bailey & Co., of Amesbury, Mass.

BAILEY ELECTRIC VICTORIA PHAETON

Motor, General Electric series, located at the rear, capacity for 400 per cent. overload, Edison battery of 24 cells, weight 760½ lbs., 48 volts, 180 ampere hours; controller General Electric, four speeds forward, 2 reverse, drive by chain; two sets of contracting brakes on rear wheels and motor, lined with either raybestos or thermoid, tires pneumatic on Q. D rims; steering wheel at the left; frame of structural steel; springs front and rear, semi-elliptic; wheel base 82 in.

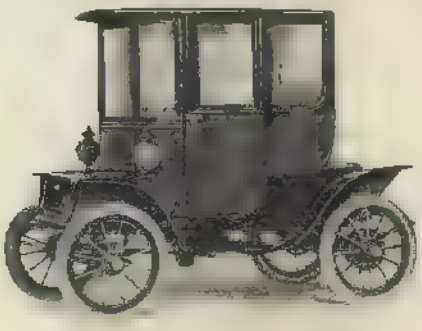
Baker Electric Cars.

Made by the Baker Motor Vehicle Co., Cleveland, O.



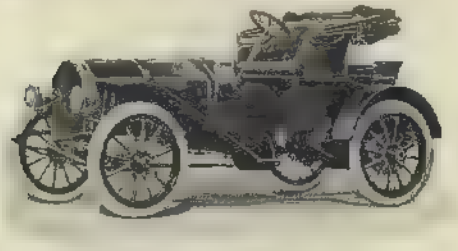
BAKER MODEL QUEEN VICTORIA, $2,000.

Baker motor attached to frame by three point suspension; Baker controller, Edison or Baker batteries, 28 cells.



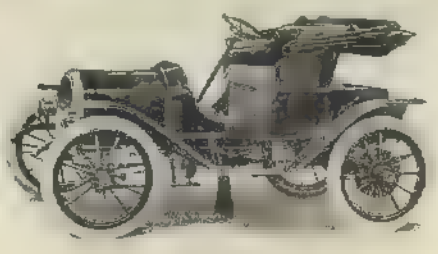
BAKER EXTENSION COUPE, $2,500.

Four passenger coupe. Also supplied straight front, two passenger $2,400. Chassis details the same as Model Queen Victoria.



BAKER RUNABOUT $2,000.

Also supplied runabout coupe body, two passenger, $100 additional. Chassis details same as Model Queen Victoria.



BAKER RUNABOUT

Coupe body interchangeable on this chassis for $300 additional. Chassis details the same as Model Queen Victoria.

BAKER SPECIAL EXTENSION COUPE, $2,700

Pneumatic or solid cushion tires. Chassis details the same as Model Queen Victoria. The following models also supplied: Stanhope, $1,000; Suburban $1,500; Brougham, $3,500; Landaulet $3,500, Surrey, $2,200; Depot Wagon, $3,200.

Waverley Electric Cars.

Made by the Waverley Co., Indianapolis, Ind.

WAVERLEY 81 BROUGHAM, $2,600.

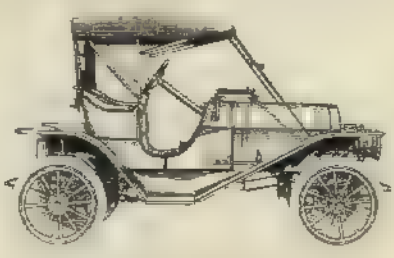
Four passenger Brougham. Waverley motor in rear, Exide Waverley or Edison battery; 32 cells, Waverley controller; four speeds forward, two sets of brakes expanding on the rear wheels and jack shaft, tires 32 x 3½, solid or pneumatic front and rear; steering wheel, left, springs full elliptic front and rear. Wheel base 80 inches.

WAVERLEY MODEL 75-C, BROUGHAM, $2,400.

Wheel base 79 inches. Other chassis specifications the same as Model 81.

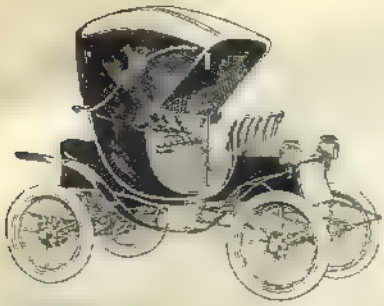
WAVERLEY MODEL 79-C COUPE $2,150.

Three passenger coupe. Front tires 32 x 3, rear tires 32 x ½, springs full elliptic front and rear. Wheel base 79 inches. Other specifications the same as Model 81.



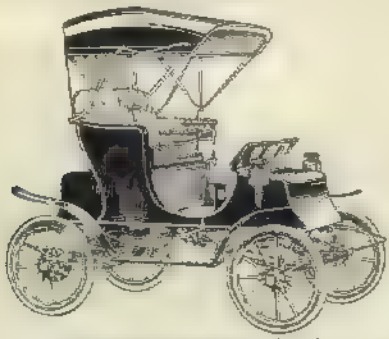
WAVERLEY MODEL 78 ROADSTER, $1,700.

Three passenger roadster, springs front and rear, full elliptic; wheel base 96 inches. Other chassis details the same as Model 81.



WAVERLEY MODEL 76 VICTORIA, $1,850.

Three passenger Victoria. Front tires 32 x 3, rear 32 x 3½; springs full elliptic front and rear, wheel base 79 in. Other chassis details the same as Model 81.



WAVERLEY MODEL 74, $1,600.

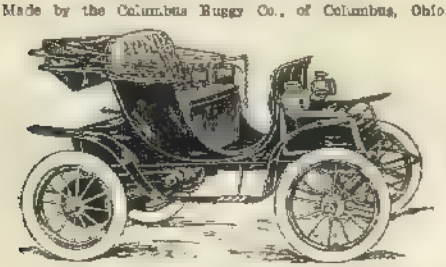
Three passenger Stanhope. Front tires 32 x 3, rear 32 x 3½, springs full elliptic front and rear. Other chassis details the same as Model 81.

WAVERLEY AMBULANCE, $3,250.

Six passenger front wheels 32 x 3, rear 36 x 3; frame armored wood, semi-elliptic springs front, full elliptic rear, wheel base [illegible] inches. Other chassis details the same as Model 81.

Columbus Electric Cars.

Made by the Columbus Buggy Co., of Columbus, Ohio.

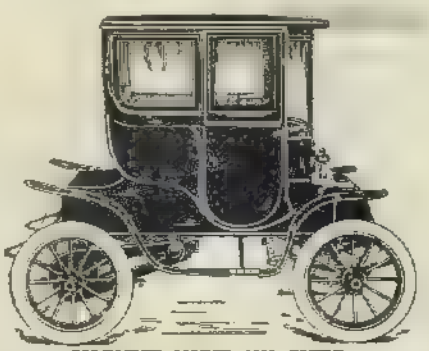


COLUMBUS MODEL 1000, STANHOPE.

Two passenger Stanhope, maximum speed, 22 miles an hour; series-parallel motor located in the centre; 32 cell Exide battery, 60 volts, 28 amperes; weight, 900 pounds; drum type controller giving 6 speeds, drive by silent chain and double side chain, two sets of brakes, one on rear wheels and one on motor; front wheels pneumatic 30 x 3½, rear 31 x 4 in. Q. D. rims, steering gear at the left, frame pressed steel, front springs, ¾ platform rear, full elliptic, wheel base, 75 in.

COLUMBUS ELECTRIC COUPE, MODEL 1002.

Two passenger coupe, mounted on the same chassis as the Model 1000 Stanhope.



COLUMBUS MODEL 1220 COUPE.

Four passenger coupe; battery of 38 cells either Exide or Edison, 60 volts, 35 amperes; weight, 1050 pounds, drive by silent chain and bevel gears, tires, pneumatic, 34 x 4; front springs, semi elliptic, rear, ¾ elliptic, other details the same as Model 1000.

Hupp-Yeats Electric Cars.

Made by the Hupp-Yeats Electric Car Co., Detroit, Mich.

HUPP YEATS 3 PASSENGER LANDAULET, $1,750.

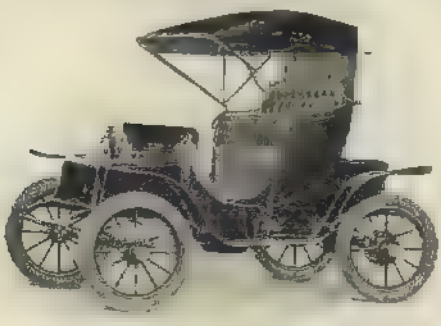
Westinghouse motor, type [illegible] 48 volts, 26 amperes, 1750 r. p. m., series wound, Westinghouse controller, 37 cells storage battery; capacity 27 amperes for 5 hours, two sets of brakes expanding and contracting, steering is with tiller, springs semi-elliptic in front, ¾ elliptic in rear, frame of pressed steel; wheel base 86 in., tires 32 x 3½, equipment, 2 front lamps, tail lamp, odometer, voltmeter, all operated by push button, tire repair kit and tool kit.

Detroit Electric Cars.

Made by Anderson Electric Co., New York City.

Four passenger, extension brougham. Chainless direct shaft drive, wheel base 83 inches; front and rear wheels 32 x 4 inches pneumatic, 24 cells, 13 plate load, or 40 cells A. E. Edison. $600 extra for Edison.

DETROIT MODEL Q 10 BROUGHAM, $2,800.



DETROIT MODEL 15 VICTORIA, $2 000.

Wheel base 80 inches. Other chassis details the same as Model 10.

DETROIT MODEL M, ROADSTER, $2,000.

Gentlemen's runabout roadster. Silent double tandem enclosed drive. Wheel base 98 inches; front and rear tires 34 x 3½. Other chassis details the same as Model 10.

DETROIT MODEL 21 BROUGHAM $2 700.

Four passenger extension brougham. Chassis, side chain drive, wheel base 85 inches; tires 32 x 4, pneumatic. Other chassis details the same as Model 10.

DETROIT MODEL 22 BROUGHAM, $2,500

Four passenger brougham, chassis, side chain drive; wheel base 80 inches; other chassis details the same as Model 10.

DETROIT MODEL 23 VICTORIA $1 900

Side chain drive, tires front and rear, 32 x 4 inches. Other chassis details the same as Model 10.

DETROIT MODEL S ROADSTER, $1 800

Torpedo body. Chassis silent enclosed Reynolds tandem chain drive; wheel base 84 inches. Other chassis details the same as Model 10.

DETROIT MODEL 19, $1 800.

Victoria body on Roadster chassis. Wheel base 87 inches. Other chassis details the same as Model 10.

DETROIT MODEL 20 ROADSTER, $1 700.

Wheel base 87 inches. Other chassis details the same as Model 10.

DETROIT MODEL 16 VICTORIA, $2,025.

Wheel base 80 inches. Other chassis details the same as Model 10.

DETROIT MODEL 11, BROUGHAM, $2 600.

Four passenger brougham. Wheel base 80 inches. Other chassis details the same as Model 10.

DETROIT MODEL Q 12, 3 PASSENGER COUPE WITH FOLDING FRONT SEAT, $2,400

Chassis details the same as Model 10.

DETROIT MODEL 14, VICTORIA $2 300

Four passenger Victoria. Chassis details the same as Model 10.

Phipps-Grinnell Electric Cars.

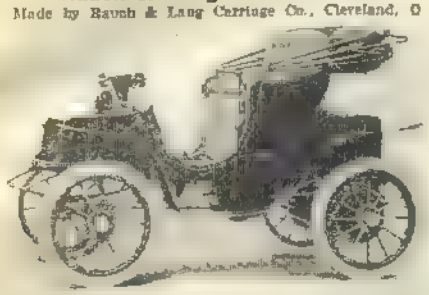
Made by the Phipps-Grinnell Auto Co., Detroit, Mich.

PHIPPS-GRINNELL FOUR PASSENGER COUPE.

Pedal reverse, making it unnecessary to remove the hands from the steering wheel, driving chain running in oil. (This chassis also made with light delivery car body.)

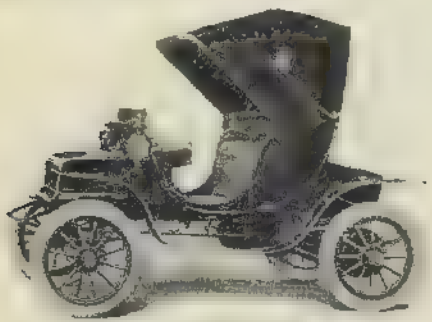
Rauch & Lang Electric Cars.

Made by Rauch & Lang Carriage Co., Cleveland, O.



RAUCH & LANG STANHOPE, $1,900 to $2,000.
Wheels and tires 32 x 3½, special electric, pneumatic, wheel base 81 in.; Chassis No. 30 chain drive, 24 cell battery. Chassis No. 31 shaft drive, Edison battery extra.
RAUCH & LANG STANHOPE NOS. 32 & 33, $2,150 to $2,250.
No. 32 enclosed chain drive, No. 33 shaft drive. Other chassis details the same as the previous Stanhope model.

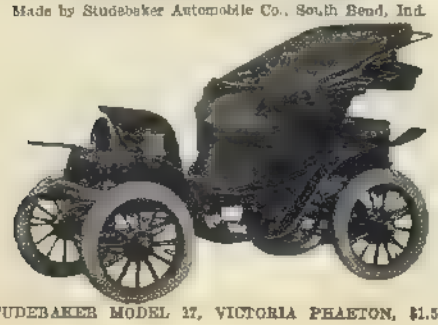
RAUCH & LANG COUPE, $2,600 to $2,700.
Wheels and tires 32 x 4, special electric pneumatic, or high efficiency cushion furnished on Chassis No. 32, enclosed drive and No. 33, shaft drive.



RAUCH & LANG VICTORIA $2,200 to $2,450.
Wheel base 88 in., wheels and tires 30 x 4, special electric pneumatic or 34 x 4 cushion. Furnished on Chassis No. 34 enclosed chain drive, or No. 35 shaft drive.

Studebaker Electric Cars.

Made by Studebaker Automobile Co., South Bend, Ind.

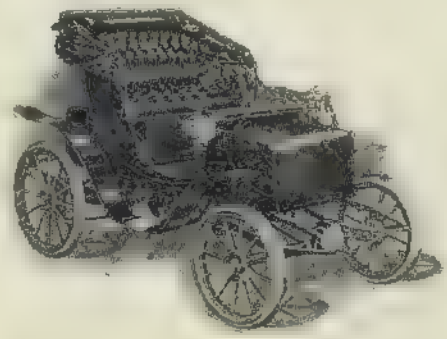


STUDEBAKER MODEL 17, VICTORIA PHAETON, $1,500.
Also supplied as a Landaulet, $1,675; Coupe, $1,775.)
Westinghouse motor; suspended from chassis; Westinghouse controller, at the left; battery 36-11 M. V. Exide; mileage 50 to 100 per charge; tires 30 x 3½ front and rear; wheel base 71 in.; springs semi-elliptic front, full elliptic rear plates on motor shaft and wheel hubs, side lever steering, 5 speeds forward, 3 reverse, single chain drive.

STUDEBAKER MODEL 22 RUNABOUT, $900.
Also supplied as Stanhope, $950; Coupe, $1,200 to $1,250.) Battery 34-11 P. V. Exide, mileage 40 to 70 per charge; wheel base 67 in., 4 speeds forward and reverse, other chassis details same as Model 17.

Woods Electric Cars.

Made by Woods Motor Vehicle Co., Chicago, Ill.



WOODS MODEL 1014 BROUGHAM, $3,100.
Four passenger brougham. Motor, special Woods' 4 pole series wound, wheel base 90 in.; tires 30 x 3½ front, 34 x 3½ rear solid. Two sets of brakes, one operated by controller handle, outer expanding metal brake on rear wheel, operated by pedal; 40 cells M. V. lead battery.

WOODS MODEL 1012, $2,900.
Five passenger coupe. Wheel base 86 in. Other chassis details the same as Model 1014.

WOODS MODEL 1014 C COUPE, $2,650.
Chassis details the same as Model 1014.

Ohio Electric Cars.

Made by the Ohio Electric Co., Toledo, Ohio.

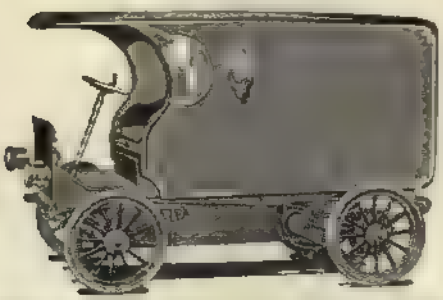
OHIO MODEL D COUPE.
Dodge patented magnetic disc controller, four speeds forward and reverse, 30 cell battery; two sets of brakes, operating on rear wheels, Q. D. tires 34 in.; artillery wheels, semi-elliptic springs front, ¾ elliptic rear, frame pressed steel; wheel base 80 in.

OHIO MODEL F VICTORIA.
Chassis details the same as Model D.

OHIO MODEL G COUPE.
Chassis details the same as Model D, except the wheel base is longer.

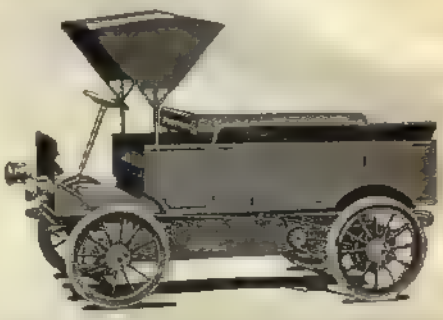
Detroit Electric Commercial Vehicles.

Made by Anderson Electric Car Co., Detroit, Mich.



MODEL 601. PANEL BODY 1000 LB. DELIVERY WAGON, $1,500.

Speed 14 m. p. h., mileage 50-60 miles. Motors suspended from frame; double side chain drive to sprockets on rear wheels (also furnished as 2000 lb. truck $1,400, and 3000 lb. truck, $1,650, chassis only).



MODEL 602 EXPRESS BODY 1,000 LB. DRAY $1,300

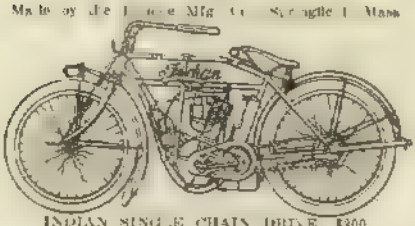
Chassis details same as Model 601. Other sizes also supplied as described under Model 601.

Eleventh Annual Motorcycle Review

Comprising all 1911 Models of all Motorcycles on the American Market for the current year

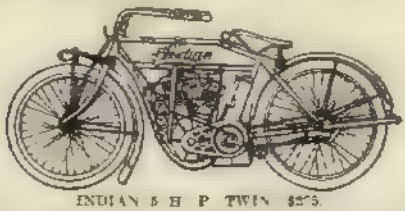
Indian Motorcycles.

Made by the Indian Mfg. Co., Springfield, Mass.



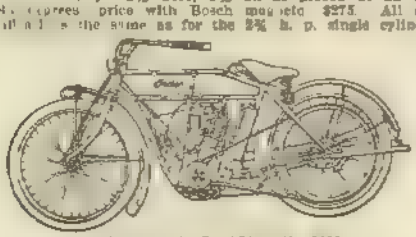
INDIAN SINGLE CHAIN DRIVE $200

Motor single cylinder, 2¾ h. p., 2¾ in. bore, 3¼ in. stroke, placed in inclined position and fitted with free engine clutch; frame has 1 in. drop at 11½ in. reinforced tubing; rear fork has coil springs; front fork has grip control. Hassler shock absorber. Corbin brakes. Messinger engine saddle, two gallon gasoline tank, 2 qt. oil. 53 in. wheel base. G. & J. rims, automatic mechanical oil pump; price $200 with magneto, $225 with magneto.



INDIAN 5 H. P. TWIN $275.

Motor 5 h. p., 2⅜ bore, 3½ stroke placed at an angle of 45 degrees; price with Bosch magneto $275. All other specifications the same as for the 2¾ h. p. single cylinder.



INDIAN 4 H. P. SINGLE, $225

Motor 4 h. p., 3¼ in. bore and 3 43-64 in. stroke; chain drive; battery ignition $225, magneto $25 extra; two speed gear with free engine clutch $50 additional. All other specifications same as for the 2¾ h. p. single cylinder. This model is also made with belt drive at the same price as for chain.

INDIAN 7 H. P. TWIN

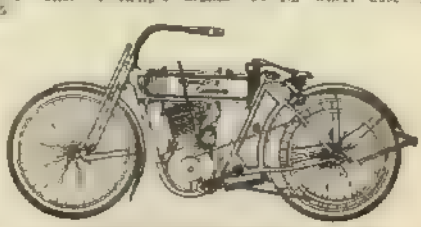
Motor, 7 h. p., 3¼ in. bore, 3 43-64 in. stroke, placed at a 42 degree angle, price $300; two speed gear with free engine clutch $50 extra. All other specifications same as for the 2¾ h. p. single.

Harley-Davidson Motorcycles.

Made by the Harley Davidson Motor Co., Milwaukee, Wis.

HARLEY DAVIDSON MODEL 7 SINGLE $225.

Motor 7 h. p., motor, 3 5 16 in. bore 3½ in. stroke inclined forward in looped frame; free engine idler pulley; cushion front fork; double grip control; Schebler carburetor; semi automatic valve lifting system. Troxel or Messinger saddle. Thor or Eclipse brakes; 55 in. wheel base; price $225.



HARLEY DAVIDSON MODEL 7 A $250.

Model 7 A is the same as Model 7, but is equipped with Bosch magneto and sells for $250.

HARLEY-DAVIDSON TWIN, MODEL 7-D, $300.

Motor, 8¼ h. p., 28 in. wheels only and Bosch magneto. Other specifications same as for the single cylinder models

Wagner Motorcycles.

Made by the Wagner Motorcycle Co., St. Paul, Minn.

WAGNER SINGLE CYLINDER $210.

Motor, 4 h. p., placed in loop; 3¼ bore, 3½ stroke, free engine optional; 16 in. frame; double plunger type front fork; double grip control Schebler carburetor; Troxel or Mesinger saddle, Eclipse brake, battery ignition, magneto optional; fuel tank capacity 2 gal., oil 3½ qts.; "K & R" two speed and free engine optional, wheel base 55 in.; tires M. & W.; weight 165 lbs. Price $210.

Schickel Two Cycle Motorcycles.

Made by Norbert H. Schickel, 5 E. 83d St., N. Y. City.

SCHICKEL SINGLE CYLINDER MOTORCYCLE, $250.

Two cycle single cylinder, 5 h. p. motorcycle, 3⅜ in. bore and stroke, free engine by means of twist grip controlled idler; belt drive, 18¾ in. frame height, 1¼ in. and 13-16 gauge tubing, Schickel trailing type, front spring fork; Schickel carburetor; Persons saddle; U & H. magneto. Eclipse coaster brakes, unit frame plate; capacity three gal. oil mixed with gasoline, wheel base 55 in. tires 28 x 2½, weight 170 lbs.; price $250 with magneto

The Peerless S. D. Motorcycle.

Made by the S. D. Mfg. Co., of Brooklyn, N. Y.

PEERLESS S. D. SINGLE CYLINDER MOTORCYCLE

Four h. p. motor; mechanically operated valves, Bosch or Hess magneto, motor mounted on loop frame; free engine clutch at motor end of the drive shaft, automatic lubrication; controlled by handle bar grips; 2½ inch tires; 26 inch wheels; wheel base 53 inches, weight 160 lbs. A 7 h. p. twin is also made which weighs 175 lbs.; all other specifications being same as for the single.

Pope Motorcycle Co.

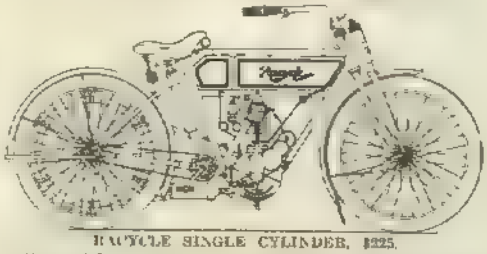
Made by the Pope Mfg. Co., Hartford, Conn.

POPE MODEL H, 3 H. P., $175.

Single cylinder, 3 h. p. motor, set vertical in frame; magneto ignition, Breese carburetor; free belt drive; 54 inch wheel base; 28 x 2½ inch wheels; ignition by magneto; fork with Vanadium steel springs, double grip wire controled, weight 140 lbs.; price $175 including tool equipment.

Racycle Motorcycles.

Made by the Miami Cycle & Mfg. Co., Middletown, Ohio

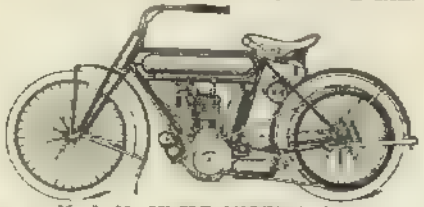


RACYCLE SINGLE CYLINDER, $225.

Motor, 4 h. p., 3⅜ bore, 3½ stroke, set vertical in frame, frame height 23 in., 16 gauge tubing, free engine by Racycle clutch controlled from handle bars; barrel and plunger type spring front fork; Racycle carburetor; Troxel or Mesinger saddle; Musselman coaster brake; two gal. gasoline tank, ½ gal oil, located between top and lower bar of frame; wheel base 58 in., G & J. or M. & W. tires; weight 175 lbs.; prices $225 to $262 50 according to equipment and ignition

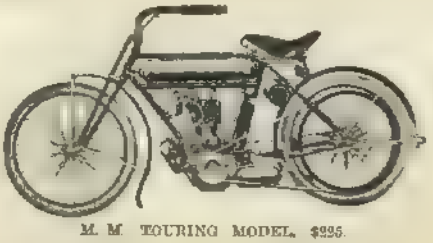
M. & M. Motorcycles.

Made by the American Motor Co., Rockford, Mass.



M. & M. SINGLE MODEL 4, $225.

Four h. p. motor, 3½ bore, 3 34-64 stroke; free engine optional; 28 inch frame, 1⅛ x 1 1 16 tubing; M. & M. Leaf Spring fork, double grip controlled, M. & M. or Schebler carburetor, No. 3 cavalry saddle, Bosch magneto 0 qt. gasoline, 1½ qt. oil tank; 54 in. wheel base weight 165 lbs price $225; with full equipment of tools, tire repair kit, and pump.



M. M. TOURING MODEL, $225.

Same specifications as for the single cylinder Model 4, with the exception of the weight, which is 175 lbs.

M. M. SEVEN HORSE POWER $300

Motor, 7 h. p., cylinder set at an angle of 90 degrees fuel capacity 7 qts.; wheel base 76 in.; price $300 other specifications same as for the single cylinder. All models furnished with Tandem attachment or Tri-car.

Emblem Motorcycles.

Manufactured by the Emblem Motorcycle Co., Angola, N. Y.

EMBLEM MODEL 104 SINGLE, $225

Motor single cylinder, 4 h. p., 4 x 3½. Emblem free engine, V or flat belt drive. Heitger carburetor. Herz magneto. Light force pump, 2 gal. gasoline tank, two qts. oil, 56 in. wheel base; 28 in. wheels, spring fork. Empire, Diamond or Kokomo tires. Eclipse, New Departure or Corbin coaster brake; Mesinger, Troxel or Persons saddle, weight 170 lbs.; $210 with magneto. $200 with battery.

EMBLEM 7 H. P. TWIN, $250

Twin cylinders, 3½ x 3⅜, weight, 200 lbs.; all other specifications the same as for the single cylinder model. Price $250, with battery; $260 with magneto.

EMBLEM MODEL 105. 5 H. P., $225

Same specifications as for the single, with the exception of the motor, which is 4 x 3⅜, and the weight 175 lbs. $225 with battery, $235 with magneto.

C. V. S. Motorcycles.

Made by the C. V. Stahl Motor Works, Philadelphia.

C. V. S. SINGLE CYLINDER MODEL B. $210

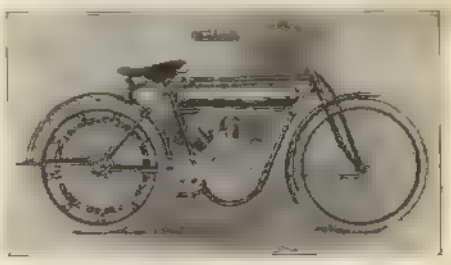
Motor, 4 h. p., 3 5-16 bore, 3½ in. stroke, set in loop frame; frame 18½ in. in height; 1¼ in. x 11 gauge tubing; Eclipse free engine pulley; C. V. S. new rocker construction, front fork; concealed wire control. Schedler or Heitger carburetor. Persons or Mesinger saddle; Eclipse or Corbin brakes. battery ignition or Bosch magneto; tank located under top bar, two gallon gasoline, 1½ qt. oil. N. S. U. two speed gear if desired, wheel base 56 inches firm, optional; weight 170 lbs. Price with battery, $210 and with magneto $235.

C. V. S. TWIN CYLINDER MODEL T. $300

This model is similar to the single cylinder, with the exception of the engine which is of V type, magneto ignition.

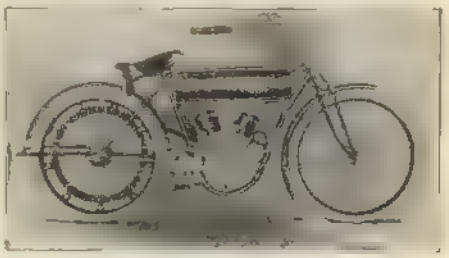
Flying Merkel Motorcycle.

Made by the Merkel-Light Motor Co., Pottstown, Pa.



FLYING MERKEL MODEL W S. SINGLE $250

Motor 4 h. p., 3.45 bore and stroke; 19 in. frame; 1¼ in., fourteen and sixteen gauge tubing; Merkel trussed spring fork, controlled by handle bars. Heitger carburetor. Mesinger saddle; Merkel band brakes; magneto ignition. Bosch high tension magneto; 1¼ gal. gasoline tank, 8 pt. oil chain or belt drive. 53 inch wheel base; 28 x 2¼ in. tires, weight 105 lbs., price $250. Distinctive features, spring frame and ball bearing motor. free engine optional.



FLYING MERKEL MODEL V 6 H. P. TWIN, $300.

Motor, 6 h. p., 3.35 bore and stroke; tires 28 x 2½ in. weight 175 lbs.; price $300. All other specifications same as for the single cylinder model.

Greyhound Motorcycles.

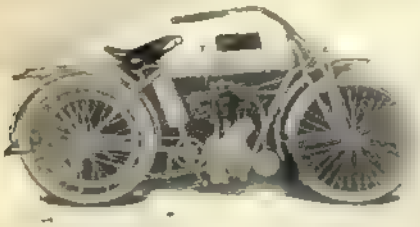
Made by the Greyhound Motor Co. of Buffalo, N. Y.

GREYHOUND MODEL 59. $225.

Motor, 4½ h. p., 3⅛ in. bore, 3 11-16 in. stroke placed vertically in frame. drive by flat belt with hand operated idler; 51 in. frame; 1¼ in. axles. gauge tubing. double construction spiral spring incased front fork; internal grip control, Breeze carburetor; Mesinger cavalry saddle; Eclipse coaster brake; tank located at top of frame six qt. fuel capacity, 2 qt. oil; wheel base 56 in., weight 200 lbs., battery ignition, $225; magneto ignition, $25.

Marvel Motorcycles.

Made by the Marvel Motorcycle Co. of Hammondsport, N. Y.



MARVEL SINGLE CYLINDER $225

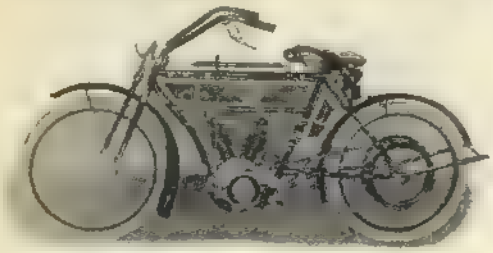
Motor, 5 h. p., 2¼ in. bore, 3½ in. stroke. Eclipse free engine placed upright in frame, frame 30 in.; Sager patent spring foot board controlled by double cables from handle bar grip, Heiger carburetor; Eclipse coaster brake; Bosch magneto ignition; gasoline is kept in five inch top tube, capacity 2 gal.; oil capacity, 2 qts.; N. S. U. change speed gear, wheel base 56 in.; weight 160 lbs.; price $225. Distinctive features, tank in frame tubes, automatic oiling controlled by float.

N. S. U. Motorcycles.

Made by the N. S. U. Motor Co., 206 W. 76th St., N. Y. City.

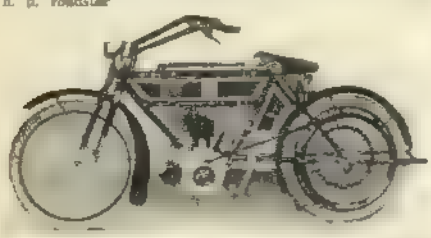
N. S. U. 2¼ H. P. ROADSTER, $250.

Motor, single cylinder, 2 19-32 bore, by 3 1-16 inch stroke, mechanically operated valves, semi-automatic carburetor, double spring front fork; controlled by handle bar grips; belt drive; wheels 26 in. in diameter; 26 x 2 inch Continental tires; New Cable type brake, Bosch magneto ignition, 2 gal gasoline tank; 1½ qts. oil; quick detachable mud guards; Meisinger or Troxel saddle; weight 125 lbs. price $250, extra 3 speed gear foot rests; new spring design frame and luggage carrier.



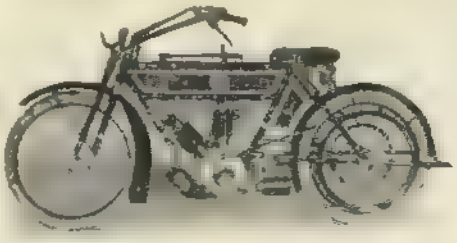
N. S. U. 3½ H. P. TWIN ROADSTER $300.

Motor twin cylinder 2 13-32 bore by 3 inch stroke; undergeared pulley, tires 26 x 2¼, M. & W. or G. & J., weight 140 lbs., price $300; other specifications same as for the 2½ h. p. roadster.



N. S. U. 4 H. P. "COAST TO COAST" MODEL, $325.

Four h. p. motor, extra large mechanically operated valves, double grip controlled free belt drive, 26 in. wheels, 54 in. wheel base; 3 gal. gasoline tank; 1 qt. oil tank; weight 155 lbs.; frame spring Keystone type, reinforced, quick removable wheel staves, price $325; other specifications same as for 3½ horse power roadster.

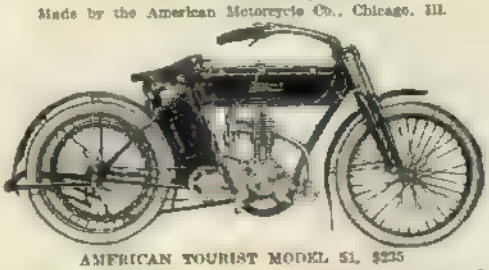


N. S. U. 6 H. P. MODEL DE LUXE, $375.

Twin cylinder motor, 3 inch bore, by 3 17-32 stroke, variable speed pulley, 26 x 2½ in. tires, wheel base 56 in., weight 175 lbs.; price $375, other specifications same as "Coast to Coast" model.

American Motorcycles.

Made by the American Motorcycle Co., Chicago, Ill.



AMERICAN TOURIST MODEL 51, $225

Motor, single cylinder, 4½ h. p., 3¼ in. bore, and 3 13-64 in. stroke, belt drive, with K. & R. two speed gear, or Eclipse free engine pulley; 19 inch frame, ball shock absorbing front fork controlled by lever English carburetor, Troxel saddle; Musselman coaster brake; ignition by dry cells, 2½ gal. gasoline tank; ½ gal. oil; wheel base 56 in., Goodyear tires; weight 175 lbs.; price $225.

AMERICAN MODEL 61 ROADSTER.

Single cylinder, 4½ h. p. motor; drive by flat belt with idler. Breese carburetor, controlled by handle bar grips, magneto ignition, price $250; other specifications same as Model 51. This model is also furnished with battery ignition at $225.

Detroit Motorcycle.

Made by the Detroit Motorcycle Co., of Detroit, Mich.

DETROIT MODEL 2, $225

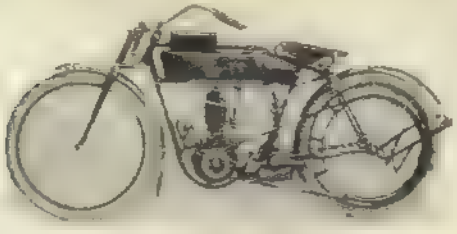
Single cylinder, 4 h. p., 3 5-8 bore by 3½ in. stroke, belt drive; 29 in. frame height; 4 and 3 inch tubing, caster type front forks; option on carburetors, Persons or Meisinger's saddle, Corbin coaster brake, two gas fuel capacity in tubing, oil capacity 1½ qts.; 80 inch wheel base, G. & J. or Diamond tires; weight 170 lbs. Price $225 with battery ignition, $25 with magneto; special features; self contained. Equipment everything including tool kit inside the frame; straight handle bars; giving perfect control of the spark and the front wheel.

Thor Motorcycles.

Made by the Aurora Automatic Machinery Co., Chicago, Ill.

THOR MODEL R, $225.

Motor, single cylinder, 4 h. p., 3.25 bore, 3.60 stroke, placed upright in frame; Thor pneumatic cushion shock absorber; Thor patented grip control; Thor carburetor Troxel saddle, Thor brakes; battery ignition; fuel tank [illegible] gal oil [illegible] pts. wheel [illegible] Empire G & J M & W. and Goodyear; weight 165 lbs.; price $225, tandem attachment, $15 side car, $90. Distinctive features, motor runs on ball bearings.



THOR MODEL M, $250.

Single cylinder, 2 gal. gasoline capacity, 2 qts. of oil capacity; Bosch magneto ignition. Other specifications the same as for Model R.

THOR MODEL T, $[illegible]

Single cylinder, 4 h. p. motor; [illegible] 1¾ gal gasoline capacity 3 lbs. oil; wheel base 55½ in. [illegible] gle 1-6 L.& price $250 drive by two inch double ply belt, operated by Thor patented belt tightener.

THOR MODEL O TWIN, $325.

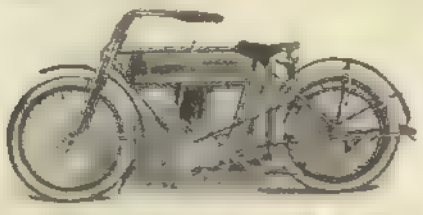
Twin cylinder; 7 h. p. 3.25 bore, 3.60 stroke magneto ignition, fuel capacity, 2½ gals., oil capacity 2 qts., wheel base 55½ in.; weight 195 lbs.; price $325.

Excelsior Motorcycles.

Made by the Excelsior Motor & Mfg. Co., 239d St. & Union Avenue, Chicago, Ill.

EXCELSIOR AUTO-CYCLE, MODEL L, $22[illegible]

Motor single cylinder, 4 h. p., bore 3 21-64, stroke 3½ sec vertical; double acting cushion spring fork; spark and throttle controlled by grips; Schebler carburetor, Excelsior or Messenger saddle; Excelsior hub brakes, battery ignition, tank located in top of frame fuel capacity 2 gal, oil capacity 3 pts wheel base [illegible] in.; tires 2½ in. Empire M. & W. G & J. or Goodyear, weight 170 lbs price $225. Model LM, same as Model L, with exception of ignition which is by magneto, price $250.



EXCELSIOR AUTO-CYCLE, MODEL K, $225.

Motor, single cylinder; [illegible] p wheel [illegible] weight 180 lbs. battery ignition; price $225 with magneto, $250, and known as Model K M.

EXCELSIOR AUTO-CYCLE, MODEL C, $310.

Motor, 6 h. p., twin cylinder; bore 3 in.; stroke 3½ in.; two gal. gasoline tank, 3½ pt. oil wheel base 56½ in.; weight 220 lbs.; price $310. Other specifications same as for the single cylinders.

The Yale Motorcycles.

Made by the Consolidated Mfg. Co. of Toledo, Ohio.

YALE 4 H. P. SINGLE, $200.

Single cylinder, 4 h. p. motor, 3¼ bore, 3 43-64 stroke, offset belt drive, flat belt; 2 gal. gasoline tanks; 3 qt. oil; 1⅛ inch 16 gauge tubing; 28 x 2½ inch tires. 55⅛ inch wheel base weight 170 lbs., price $200; battery ignition $35 extra; equipped with free engine, $15 extra.

YALE TWIN CYLINDER, $300.

Motor 7 h. p.; bore and stroke single same as cylinder set at an angle of 45 degrees; Corbin hand brake in rear wheel; weight 190 lbs.; magneto ignition, $300; other specifications same as for the single cylinder.

The Haverford Motorcycles.

Made by the Haverford Cycle Company, Phila., Pa.

HAVERFORD SINGLE CYLINDER, $150.

Motor, 4 h. p., 3¼ inch bore and 3 43-64 stroke, Eclipse free engine, 28 in. frame, 4 leaf spring front fork; handle bar controlled; Schebler carburetor Troxel saddle New Departure coaster brake 1½ gal. gasoline tank located under top bar, 1¼ qt. oil capacity; 58 in. wheel base; Ko-[illegible] or Goodyear tires; weight 145 lbs.; price with battery ignition $150, and with magneto ignition $185.

Thiem Motorcycles.

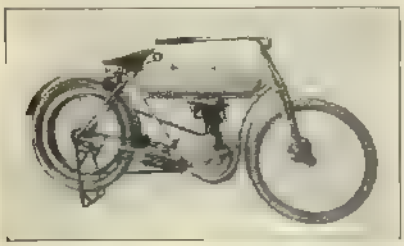
Made by the Thiem Mfg. Co., Fond du Lac, Wis.

THIEM MODEL F, $250.

Single cylinder, 4⅛ S. A. E. p., 3⅛ bore, 3⅝ stroke set vertical in loop frame; 20 in. frame, 1¼ in. tubing, spring fork, Bowden wire control, Troxel saddle, Musselman coaster brake, or option on others, battery or magneto ignition, fuel tank capacity 2 gals.; oil capacity ½ gal.; Thiem two speed hub; wheel base 56 in., tires, optional, weight 170 lbs., price, $225 with battery, $250 magneto.

Eagle Motorcycles.

Made by the Eagle Motor Works, Minneapolis, Minn.

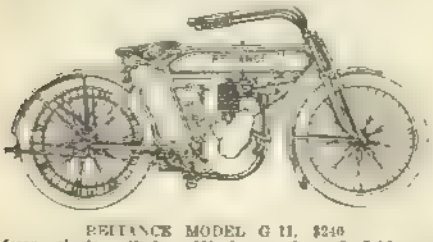


EAGLE SINGLE MODEL C, $250.

Motor, 4 h. p., 3⅛ in. bore, 3½ in. stroke, [illegible] vertically in frame, V belt transmission, frame [illegible] in. tubing, 1¼ in., spring and trussed front [illegible] wire control; Schebler carburetor, Troxel saddle, [illegible] coaster brakes, battery ignition, 7 qt. [illegible] tank, 3 qt. oil, 58 in. wheel base, 28 x 2½ [illegible] tires, weight 200 lbs., price $210, magneto, $25 extra. Eclipse free engine, $5.00 extra.

Reliance Motorcycles.

Made by the Reliance Motorcycle Co., Owego, N. Y.

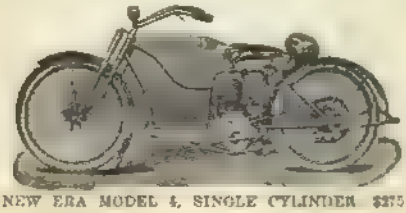


RELIANCE MODEL G 11, $240.

Motor, single cylinder, 4½ h. p., bore 3 5-16, stroke 3⅝, belt drive placed in loop frame; 1¼ in. tubing, front spring fork; piano wire control; Reliance carburetor, Messinger saddle, Eclipse coaster brakes; 2¼ gal. gasoline tank, 3 qt. oil; wheel base 57 in.; Diamond tires, weight 190 lbs.; battery ignition; price, $240; with magneto $275. Distinctive features, large mechanical valves in front cams integral with shaft, improved timer and self starting oiling system.

New Era Autocycles.

Made by the New Era Auto-Cycle Co., Dayton, Ohio.



NEW ERA MODEL 4, SINGLE CYLINDER, $275.

Motor, 4 h. p., 3¼ bore, 4½ stroke set upright in frame under seat, free engine, cranked by handle same as an automobile; 26½ in. frame, ⅞ to 1¼ in. tubing; spring front fork; control by grips and foot pedals; foot pedals on foot board. Reg. ser carburetor, form seat saddle, internal expanding brakes, lubricating tank under seat, gasoline tank rear of seat; fuel tank capacity 1¾ gal., oil capacity 3 pts.; two speed transmission; wheel base 62 in., weight 196 lbs. price with battery equipment, $275, with magneto, $300. Tandem attachment $25 extra. Tri-car, $425. Distinctive features: free ball bearing motor, two speed transmission; foot board, form seat, internal expanding brake, 62 in. wheel base. This model is also fitted with a 6 h. p. motor 3⅝ in. bore, 3⅝ in. stroke; battery magneto ignition, for $325.

Reading Standard Motorcycles.

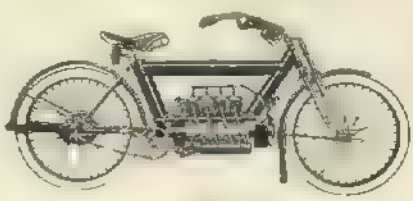
Made by the Reading Standard Co. of Reading, Pa.

R S MODEL 11, $250.

Single cylinder, 4 h. p. motor, 3 11-32 bore by 3 15-32 stroke, belt drive; free engine effect with belt type idler operated by foot; 18 in. frame, 1¼ and 1⅛ tubing, spring front fork with spherical movement. Bowden wire control, Schebler carburetor; Troxel saddle, two sets of brakes, regular coaster and rim brake. Bosch high tension magneto ignition, 1¾ gal. gasoline capacity, ½ gal. oil tank set horizontally between head and seat rest; wheel base 55 in.; tires 28 x 2½; price $250, distinctive features, foot operated belt type, service rim brake in addition to coaster brake and foot rests.

Pierce Motorcycles.

Made by the Pierce Cycle Co., Buffalo, N. Y.



PIERCE FOUR CYLINDER MODEL, $400.

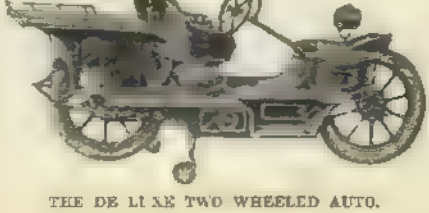
Motor, 7 h. p., four cylinders, 2⅛ x 2 7-16; two speed sliding gear transmission, multiple disc clutch; ignition by magneto, spring fork, [illegible] in. 3 gauge, serves as gas tank, Breese carburetor, tires 28 x 2½; wheel base 60 in.; control is by Bowden wire; Messinger saddle used and Rough Rider grips. Tandem attachment, $15; luggage carrier, $7.50.

PIERCE SINGLE, $250.

Motor, 5 h. p., 3⅛ x 3⅛; wheel base 54 in. Other chassis details same as the four cylinder.

The De Luxe Two Wheeled Auto.

Made by the Militaire Auto Co., Cleveland, Ohio.

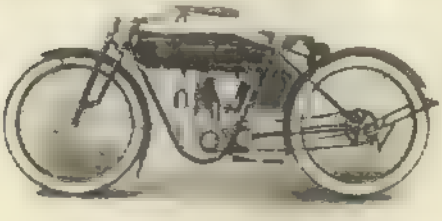


THE DE LUXE TWO WHEELED AUTO.

Furnished with either single or double motor, cylinder of four cycle type suspended on three point radius form, magneto ignition; 30 in. wheels with 2½ inch tires; spark and throttle on steering wheel; brake and speed levers operated by pedals on foot board, idler wheels to prevent skidding, and to hold the machine upright when at rest, weight 260 lbs., rear mud guard provided with baggage deck.

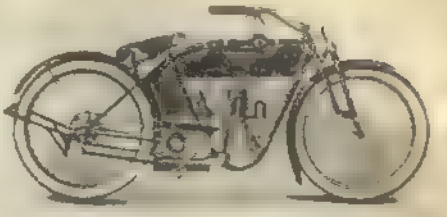
Minneapolis Motorcycles.

Manufactured by the Minneapolis Motorcycle Co., Minneapolis, Minn.



MINNEAPOLIS MODEL L C $225

Four h. p., single cylinder motor set vertical in loop frame, bore 3.25 in., stroke 3.65, multiple disc clutch on motor; 18 in. frame, height from crank shaft, tubing 1¼ in., 14 gauge, double fork and triple spring system, double grip control; Th[illegible] automatic carburetor and coaster brake Persons, Mesinger or Troxel saddle; battery ignition with two dry cells; 2 gal. gasoline tank and 3½ qt. oil located between horizontal bars, wheel base 67 in., tires M & W or G. & J., weight 180 lbs., price $225, tandem attachment $15 extra.



MINNEAPOLIS MODEL K, SINGLE, $275

The same specifications as for the Model L C with the exception that this machine is fitted with a [illegible] speed gear on the counter shaft which is [illegible], weight 190 lbs.; price, $27[illegible].

MINNEAPOLIS MODEL N, SINGLE, $300

Single cylinder 5 h. p. motor; placed vertically in frame, 3½ in. bore, by 3⅝ in. stroke, multiple disc clutch enclosed in motor base, giving free engine; 18 in. frame planetary change speed gear enclosed in motor base; 64 in. wheel base; weight 175 lbs.; price $300; other specifications same as Model K.

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2.0—Single Bat., 4 h. p., C. V. Stahl Motor Works ... 245
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250—Single Mag., 4 h. p., Detroit Motorcycle Co 246
260—Twin Magneto, 7 h. p., Emblem Motorcycle Co 245
260—Single Mag., 4½ h. p., American Motorcycle Co 244
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300—Twin, 7 h. p., Hendee Mfg. 243
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Gasoline Commercial Cars

American Gasoline Commercial Cars.

Made by the American Motor Truck Co., Lockport, N. Y.

AMERICAN MODEL M, $3,250.

Express body; capacity 2 tons. Motor, 45 h. p., water cooled; four cylinders, 4⅛ x 5½, cast in pairs; power plant demountable; ignition by Bosch dual system, with two sets of spark plugs; leather faced cone clutch; three speed roller bearing transmission located in the middle; drive by chain, direct on third; two sets of brakes expanding and contracting on the rear wheels and jack shaft; tires solid, front and rear; steering wheel at the right; 16 gal. gasoline tank under seat; frame of armored wood, springs, front and rear, semi-elliptic; wheel base 132 in. Equipment of lamps, horn, tools and speedometer.

AMERICAN MODEL O, $4,750.

Stake body; capacity 5 tons. Motor 60 h. p., water cooled, four cylinders, 5¼ x 6, cast singly; the transmission may be either sliding or planetary as desired, rear tires are twin solid; rear springs, half platform; the gasoline tank has a capacity for 22 gals.; wheel base 130 in. Other chassis details are the same as Model M.

AMERICAN MODEL L, $4 000

Stake body capacity 3 tons. Any body may be had. The transmission may be either sliding three speed, or planetary two speed, as desired; rear tires are twin solid; rear springs, half platform, gasoline tank has a capacity for 22 gals.; wheel base is 130 in. Other chassis details are the same as Model M.

Adams Gasoline Commercial Cars.

Made by The Adams Bros. Company, Findlay, Ohio.

ADAMS MODEL B, $1,400.

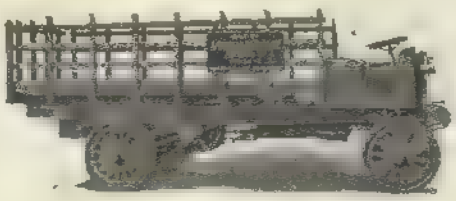
Panel delivery wagon; capacity of 1500 lbs. Motor, 2 cylinders 3⅜ x 5, cast en bloc, water cooled; ignition by Eisemann magneto with either single or dual system; leather faced cone clutch; three speed sliding selective transmission, located in the middle, drive by shaft; two sets of brakes expanding and contracting on the rear wheels, frame of pressed steel, springs front and rear semi-elliptic; tires 32 x 4½; wheel base 104 in. Equipment of lamps, horn, tools and motor driven air pump for tires.

ADAMS MODEL A, $1 000.

Express body, capacity one ton. Motor, four cylinders 3¾ x 5, cast en bloc, drive by chain, the brakes are located on the rear wheels and jack shaft; tires are 34 x 3½, either solid or dual pneumatic, wheel base 120 in. Other chassis details are the same as Model B, but the equipment does not include power air pump.

American LaFrance Gasoline Commercial Cars.

Made by the American LaFrance Fire Engine Co., Elmira, N. Y.



TYPE 6, AMERICAN LaFRANCE TRUCK, $5,000.

Body optional and extra, capacity 5 tons. Motor, 48 h. p., four cycle water cooled, four cylinders, 5½ x 6, cast in pairs; ignition by Bosch dual system with storage batteries; no clutch is used; hydraulic transmission operated by hand, located in the middle giving an infinite number of speeds; drive is by chain; one set of brakes expanding on the rear wheels; the hydraulic transmission may also be used as a brake; tires are block, 36 x 5 front, and 38 x 8 rear; the steering wheel is at the right; frame is of pressed steel; springs semi-elliptic front and rear; wheel base 140 in.

TYPE 5, AMERICAN LaFRANCE TRUCK, $5 000

Body optional and extra, capacity 1½ tons. Multiple disc clutch, bronze and steel discs used, sliding selective; ball bearings, three speed transmission is located in the middle, two sets of brakes expanding on the rear wheels, are used; front tires are pneumatic, 36 x 4½, rear twin pneumatic, 38 x 4½, on demountable rims; the steering wheel is at the right; gasoline tank at the rear. Other chassis details are identical with those of Type 6.

Service Gasoline Commercial Cars.

Made by the Service Motor Car Co., Chicago, Ill.

SERVICE MODEL D, ½ TON TRUCK, $750.

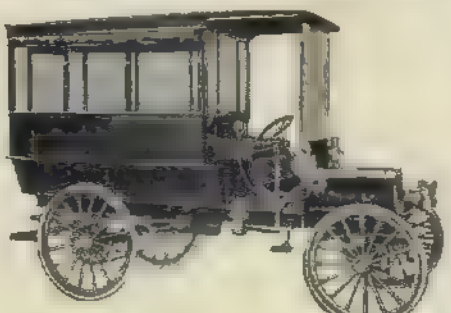
Motor, 20 h. p.; two cylinders, 4½ x 5 in.; power plant [illegible] air or water cooled, under seat; two cylinders 4½ x 5 in.; power plant [illegible] jump spark ignition by magneto, traction transmitted, direct drive [illegible] two sets of brakes contracting on rear wheels and on transmission; solid or pneumatic tires, chain rims; steering wheel, left, 20 gal gas tank rear; front springs full elliptic, rear springs coil elliptic; wheel base 73 in. Equipment of tool kit, jack, five lamps and horn.

SERVICE MODEL E, 1 TON TRUCK, $95[illegible]

Motor 3½ x 5 in. Other chassis details the same as Model D.

SERVICE MODEL C, ½ TON OR 5 PASSENGERS, $690.

Motor, 24 h. p., four cylinders 4½ x 5. Other details the same as Model D.



SERVICE MODEL B, 9 PASSENGER CAR, $850.

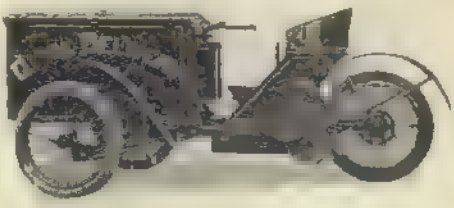
Motor 22 h. p., four cylinders 4½ x 5. Other chassis details the same as Model D.

Duryea Gasoline Commercial Cars.

Made by Chas. E. Duryea, Reading, Pa.

DURYEA DELIVERY WAGON, $725.

Capacity 700 lbs. Closed body may also be had. Motor 12 h. p.; two cycle, air cooled, located at the rear; two cylinders, 3¾ x 3¾ cast separately, offset ½ in.; power plant demountable; ignition by magneto and dry cells; drive by chains; two speeds forward; the transmission is of the special Duryea type, consisting of steel grooved rollers, which act as both clutch and change speed gears; one set of brakes of the shoe type, on the rear wheels, drum, 28 x 1¾ front, 44 x 1¾ rear, steering lever in the middle; 8 gal. gasoline tank under seat; frame of armored wood; front springs, coil and semi elliptic crosswise, rear semi elliptic crosswise. Equipment of lamps, horn and tools. Wheel base 84 in.



DURYEA 400-LB. TRIVAN, $400.

Three-wheeled parcel delivery trivan. Seat may be substituted for the package box. Motor, 7 h. p., two cycle, air cooled, located under seat; one cylinder, 3¾ x 3¾, [illegible] power plant demountable; ignition by magneto and dry cells; [illegible] transmission is of the special Duryea type, consisting of steel grooved rollers, which act as both clutch and change speed, gears and give two speeds they are located on the [illegible] shaft forming a unit [illegible] set of brakes of the shoe type on the rear wheels, steering lever in the middle; gasoline tank under seat; frame of structural steel; front springs, coil; wheel base 52 in. Equipment of lamps and tools.

Randolph Gasoline Commercial Car.

Made by the Randolph Motor Car Co., of Chicago, Ill.

RANDOLPH MODEL C 2, 1 TON TRUCK, $1,850.

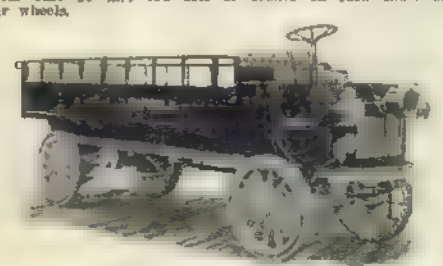
Price is for chassis only, any style of body may be fitted capacity, one ton. Motor, located under foot boards, 28 h. p. water cooled, two cylinders, 4¾ x 5¼, cast separately, ignition by magneto, leather faced cone clutch; three speed transmission on jack shaft, drive by chain; two sets of brakes expanding and contracting on rear wheels and jack shaft tires solid, 34 x 3 front and 36 x 3½ rear, steering wheel at the right; gasoline tank under seat, frame of pressed steel, front springs semi-elliptic, rear full elliptic; wheel base 96½ in. Equipment of lamps, horn and tools.

Gramm Gasoline Commercial Cars.

Made by the Gramm Motor Car Co., Lima, Ohio.

GRAMM 1 TON TRUCK, $1,800.

Price is for chassis alone; body is optional and extra. Motor, water cooled, four cylinders, 4 x 5, cast en bloc ignition by Bimmrs' magneto and storage battery; multiple disc clutch; sliding selective three speed transmission, integral with motor, clutch and jack shaft; drive by chains tires solid, 34 x 3½; frame of channel steel, springs front and rear, semi elliptic, with a supplementary cross spring wheel base 90 in.; two sets of brakes on jack shaft and rear wheels.



GRAMM 2 TON TRUCK, $2,500.

Body optional and extra. Motor, water cooled, four cylinders, 4¼ x 4½, cast in pairs transmission is integral with jack shaft, but not with clutch and motor. Other chassis details are the same as the 1 ton truck.

GRAMM 3 TON TRUCK, $3,500.

Bodies optional and extra. Motor, water cooled, four cylinders, 5 x 5, sliding selective four speed transmission, direct on third; tires, 36 x 5 front, 36 x 4 dual solid, rear wheel base 124 in. Other chassis details are the same as the 1 ton truck.

GRAMM 5 TON TRUCK $4,500.

Body optional and extra. Tires, solid, 36 x 5 front, 40 x 5 double rear; wheel base 130 in. Other chassis details are the same as the 1 ton truck.

Hatfield Gasoline Commercial Cars.

Made by the Hatfield Co., Cornwall-On Hudson, New York.

HATFIELD MODEL C, 10 PASSENGER 'BUS, $850 TO $1,000

18 h. p. motor, two cylinders 4¾ x 4, opposed, air cooled, ignition Bosch high tension magneto; friction transmission, any speed forward; two sets of brakes expanding and contracting, tires pneumatic, 35 x 4, solid 35 x 3; springs full elliptic front and rear, capacity 1[illegible] lbs equipment, lamps, horn and tools.

HATFIELD MODEL D OPEN DELIVERY WAGON $8[illegible] TO $1,000.

Specifications the same as for Model C.

HATFIELD MODEL B, $850 to $1,000

Covered delivery wagon upon the same chassis as Model C. Also furnished with glass side windows.

Glide Gasoline Commercial Cars.

Made by the Bartholomew Co., Peoria, Ill.

GLIDE 1500 LB. DELIVERY TRUCK, $2,000.

Open or closed body optional. Motor, 45 h. p., water cooled, 4 cyl., 4¾ x 5, cast singly; power plant demountable ignition by jump spark with two sets of plugs, magneto and battery, sliding selective roller bearing transmission operated by hand, three speeds forward, direct shaft drive on third, expanding and contracting brakes, on rear wheels; tires 36 x 4½; steering wheel at the right; 18 gal gasoline tank under seat; frame of pressed steel; semi elliptic springs wheel base 120 in. Equipment of lamps, tools, pump and jack.

Ideal Gasoline Commercial Cars.

Made by the Ideal Auto Company, Fort Wayne, Ind.

IDEAL MODEL C, $1,050.

Panel body, capacity, 1,200 pounds. Motor, located under seat, water cooled, two cylinders, 4½ x 4½, cast separately power plant demountable, ignition by magneto and dry cells disc clutch; two speed roller bearing planetary transmission

located on the jack shaft; drive by chain direct on second, one set of brakes, expanding on the rear wheels, tires, solid, 2½ in., on clincher rims; steering wheel at the right, ten gallon gasoline tank under floor frame of steel and wood front springs, ¾ elliptic; rear, platform; wheel base, 84 in. Equipment of lamps, horn, tools and fenders.

IDEAL MODEL D, $1 350.

Panel express body, any type may be fitted, capacity, 2,000 pounds. Motor, water cooled two cylinders, 4¼ x 5, cast separately; tires, solid, 2½ front; 3 in. rear on side flange rims, wheel base 100 in. Other chassis details the same as Model C.

IDEAL MODEL E, $1,900.

Panel express body, capacity, 4,000 pounds, any type may be fitted. Motor, water cooled, four cylinders, 4⅛ x 4¾, cast in pairs; tires, 3½ front; 4 in. rear; wheel base, 120 in. Other chassis details are the same as Model C.

Packard Gasoline Commercial Cars.

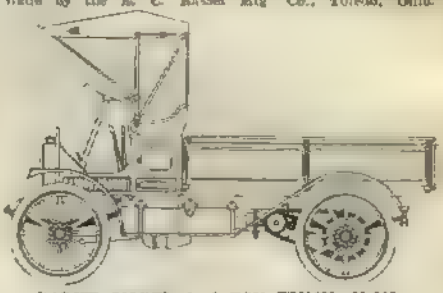
Made by the Packard Motor Car Company, Detroit, Mich

PACKARD 3-TON TRUCK, $3,650.

Three-ton truck, platform stake body. Motor, 24 h. p., water cooled, four cylinders, 4⅛ x 5½, cast in pairs; power plant demountable; ignition by magneto and dry cells; dry plate clutch; progressive, three speed, ball bearing transmission on the jack shaft, drive by chain, direct on third, two sets of brakes expanding and contracting on the rear wheels and jack shaft; front tires, solid, 34 x 4, rear, twin solid, 36 x 4; steering wheel at the right; gas tank under seat; rolled steel frame springs front and rear semi-elliptic, wheel base 144 in.; tread 56 in. Equipment of lamps, tools and odometer.

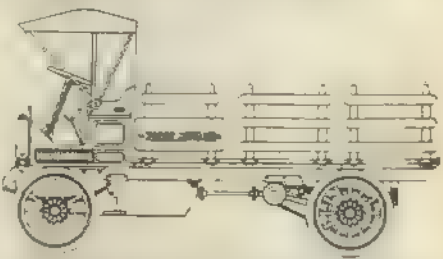
Rassel Gasoline Commercial Cars.

Made by the E. C. Rassel Mfg. Co., Toledo, Ohio.



RASSEL MODEL A, 1 TON TRUCK, $1,600.

Open express body standard. Any style may be fitted. Motor, 24 h. p., water cooled, located under foot board, four cylinders, 4 x 4½, cast in pairs, power plant demountable, ignition by Bosch dual system; multiple disc clutch, sliding selective three speed transmission, operating on ball bearings, in the middle, drive by chains, direct on third speed; two sets of brakes expanding on the rear wheels and jack shaft, tires are solid, 36 x 3 front, 36 x 4 rear, steering wheel at the right; 15 gal. gasoline tank under seat, frame of pressed steel; front springs, semi-elliptic rear platform; wheel base 96 in. Equipment of lamps, horn and tools.



RASSEL MODEL B, 2 TON TRUCK, $2,150.

Motor [illegible] h. p., water cooled, located under foot boards; four cylinders, 4¼ x 5, cast in pairs; tires solid, 36 x 4 front, 36 x 5 rear; frame of structural steel; front springs, semi-elliptic, rear platform; wheel base 120 in.; 25 gal. gasoline tank under seat. Other chassis details are the same as Model A, 1 ton truck.

Decatur Gasoline Commercial Cars.

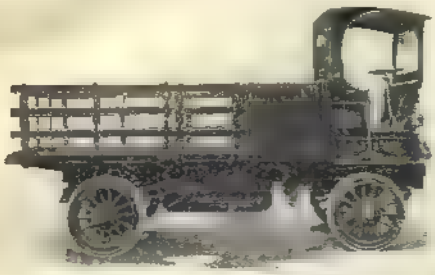
Made by the Decatur Motor Car Co., Decatur, Ind.

DECATUR MODEL H TRUCK, $2 000.

2500 lb. truck. Motor, 30 h. p., four cylinders 4 x 4, water cooled; jump spark ignition from magneto; selective sliding transmission, three speeds forward, direct on third, double chain drive to rear wheels; multiple disc clutch, wheel base 123 in., front springs semi-elliptic, rear springs platform, frame [illegible] channel steel, tires 32 x 3 front, 32 x 3½ rear, solid, two sets of brakes internal; 25 gal. gas tank. Equipment, full set of tools, two side lamps, tail lamp and horn.

Seitz Gasoline Commercial Cars.

Made by the Seitz Automobile & Transmission Co., Detroit, Mich.

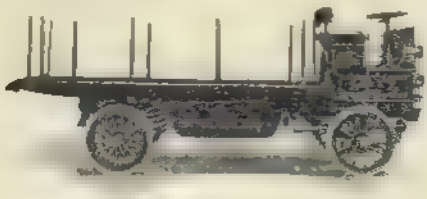


SEITZ 3 TON TRUCK, $3,500

Motor 4 cylinders 5 x 5, 40-45 [illegible] water cooled ignition jump spark [illegible] from magneto [illegible] Seitz double friction [illegible] one lever for all speeds double chain drive; two sets of brakes expanding [illegible] operated by hand and foot; springs semi-elliptic front, platform rear; front wheels 36 x 5, single solid tires, rear 36 x 3½ dual rims dual solid tires; steering wheel right wheel base 124 in. Equipment of two side oil lamps, one tail oil lamp, horn, complete kit of tools.

SEITZ 1500 LB. TRUCK, $1,200

Motor, 4 cylinder, water cooled, 3½ x 4½, 22 h. p., springs semi-elliptic front and rear; wheels 32 x 3, front and rear solid tires wheel base 96 in. Otherwise the same as the three ton truck.



SEITZ 2 TON TRUCK

Motor, 4 cylinders, 4¾ x 5. Other chassis details are the same as the three ton truck.

International Gasoline Commercial Car.

Made by the International Harvester Co. of America, Phila.

INTERNATIONAL OPEN DELIVERY WAGON.

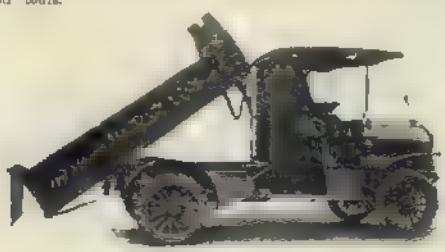
Motor, 30 h. p., two cylinders 5 x 5, suspended on steel sub-frame under body; jump spark ignition from dry cells or magneto extra; chain drive to counter shaft and chain from countershaft to each rear wheel, two speeds forward, direct drive on high speed, wheel base 90 in., front tires 3½ x 44, rear 3½ x 45, springs full elliptic front and rear, two sets of brakes contracting and expanding, 40 gal. gasoline tank. Equipment, seat, two gas [illegible] lights and generator, three oil lamps, horn and tools. [illegible] styles furnished, closed delivery wagon, passenger bus and farm wagon.

Mack Gasoline Commercial Cars.

Made by Mack Bros. Motor Car Co., Allentown, Pa.

MACK TWO TON TRUCK

Bodies may be [illegible] suit customer's requirements. Motor 50 h. p. water [illegible] ded four cylinders 5½ x 5 cast in pairs ignition by Bosch dual system; transmission, three speed sliding gear, selective clutch type; gears always in mesh; drive by chain, tires solid, 36 x 4 front, 36 x 3½ twin rear; front springs, semi-elliptic, rear platform; wheel base varies from 126 in. to 144 in., according to body. Equipment of lamps, horn and tools.



MACK THREE TON TRUCK.

Tires 36 x 5 front, 36 x 4 twin rear, wheel base 126 in. to 156 in. Other chassis details are the same as the two ton truck.

MACK FOUR TON TRUCK

Front tires 36 x 5, rear 36 x 4½ twin, wheel base 126 in. to 168 in. Other chassis details the same as the two ton truck.

MACK FIVE TON TRUCK

Front tires 36 x 5, rear 36 x 5 twin; wheel base 126 in. to 168 in. Other chassis details are the same as the two ton truck.

MACK SEVEN TON TRUCK

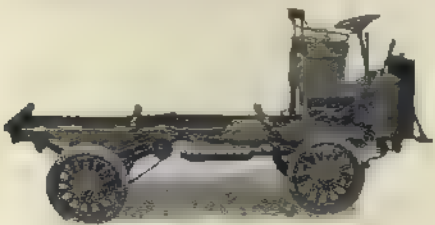
Front tires 37 x 7, rear 36 x 6 twin; wheel base 126 in to 168 in. Other chassis details the same as the two ton truck.

Harder Gasoline Commercial Cars.

Made by Harders Fire Proof Storage & Van Co., Chicago, Ill.

HARDER TYPE "50" MODEL C, $3,400

Platform stake body; capacity 1½ tons. Motor, 24 h. p., water cooled; four cylinders, 4 x 4, cast in pairs; ignition by Remy magneto and dry cells, cone clutch, three speed selective transmission, drive by double chains; steering wheel at the right; frame of channel steel; springs semi-elliptic with equalizer bar at the rear, this bar supporting the rear of the truck upon one point in the middle; wheel base 100 in. Equipment of lamps.



HARDER TYPE "58" MODEL B, $3,600

The price is for chassis alone; any type of body may be supplied; capacity of truck 3 tons. Motor, 35 h. p., water cooled; four cylinders, 4½ x 5; wheel base 120 in. Other chassis details are the same as Type "50."

Oliver Gasoline Commercial Cars.

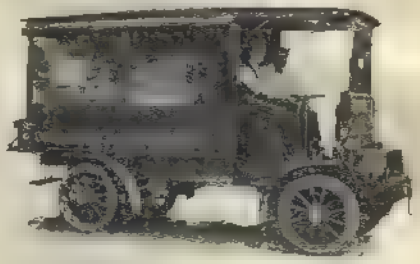
Made by the Oliver Motor Car Co., Detroit, Mich.

OLIVER DELIVERY WAGON, $1,500.

Light delivery wagon, capacity 1200 lbs.; motor, 2½ h. p.; water cooled; two cylinder opposed type, cylinders 5 x 5; power plant is demountable the radiator motor, clutch and transmission being a unit. Ignition by magneto; multiple disc clutch, two speed planetary transmission; drive by shaft; one set of brakes contracting on the rear wheels; tires are solid; steering wheel at the left, springs front and rear, semi elliptic.

Grabowsky Gasoline Commercial Cars.

Made by Grabowsky Power Wagon Co., Detroit, Mich.

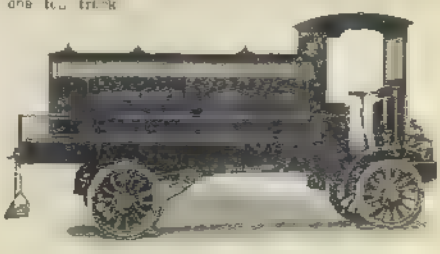


GRABOWSKY ONE TON TRUCK $2,500

Closed screen delivery wagon, capacity one ton. Motor, located under hood, 35 h. p., water cooled, two cylinders 5½ x 5, cast singly; power plant demountable; ignition by magneto and storage battery; multiple disc clutch; two speed planetary transmission, integral with engine, drive by chain, two sets of brakes expanding and contracting on the rear wheels; tires solid, 32 x 3½, front and rear; steering wheel at the right, 15 gal. gasoline tank under seat; frame of pressed steel; front springs, semi-elliptic, rear platform; wheel base 102 in.

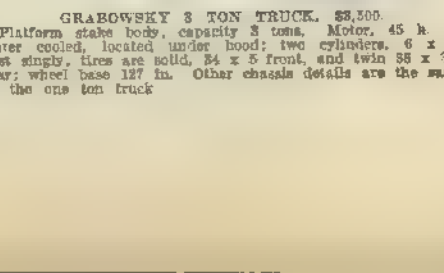
GRABOWSKY 1½ TON TRUCK $2,650

Express body, capacity for 1½ tons; tires, 32 x 4 front and rear; wheel base 127 in. Other chassis details are the same as one ton truck.



GRABOWSKY 2 TON TRUCK, $3,250.

Tank body illustrated, any type may be supplied, capacity 2 tons, front tires, 32 x 4, rear 36 x 5; wheel base 127 in. Other chassis details are the same as the one ton truck.

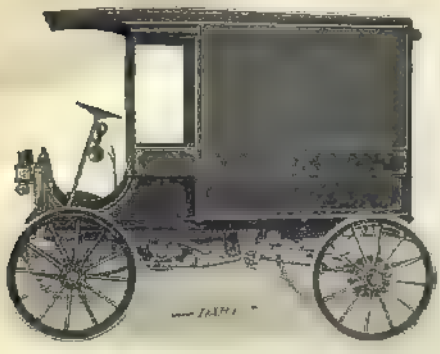


GRABOWSKY 3 TON TRUCK, $3,500.

Platform stake body, capacity 3 tons. Motor, 45 h. p., water cooled, located under hood; two cylinders, 6 x 5, cast singly, tires are solid, 34 x 5 front, and twin 36 x 3½ rear; wheel base 127 in. Other chassis details are the same as the one ton truck.

Dart Commercial Cars.

Made by the Dart Mfg. Co., Waterloo, Iowa.



DART 1000-LB. DELIVERY CAR, $690.

Motor, 14-16 h. p., water cooled; two cylinders 4¼ x 5, offset, opposed cylinders; planetary transmission, gears always in mesh, two speeds forward direct chain drive on second multiple disc clutch, jump spark ignition from magneto and non-vibrating coil pressed steel frame, steering wheel, right; springs full-elliptic front and rear, solid rubber tires 36 x 1¾; wheel base 80 in. Equipment, 2 front and 1 tail lamp, horn and tool kit.

DART OPEN DELIVERY CAR, $650

Chassis details the same as light delivery car.

Carhartt Gasoline Cars.

Made by the Carhartt Auto Corporation, Detroit, Mich.

CARHARTT 3 TON TRUCK, $6,500.

Motor, 40 h. p., 4 cylinder, 5 x 5, cast in pairs, power plant demountable; jump spark ignition with magneto or storage battery, sliding selective transmission, three speeds forward, direct chain drive on third, multiple disc clutch faced with bronze and steel; two sets of brakes expanding and contracting on rear wheels and jack shaft; front tires 34 x 4 single, rear tires 36 x 5 double, demountable rims, steering wheel at the right, 20 gal gasoline tank under seat; frame structural steel; springs semi elliptic front and rear; wheel base, 144 inches.

Dispatch Gasoline Commercial Cars.

Made by the Dispatch Motor Car Co., of Minneapolis, Minn.

DISPATCH CONVERTIBLE $850

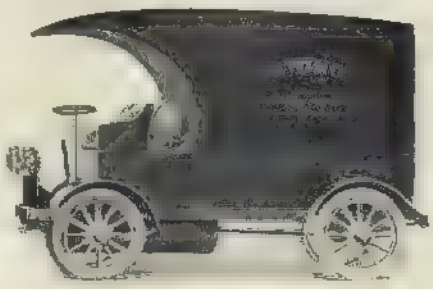
This car is of the convertible type and may be fitted with either open box body as illustrated, or a four passenger torpedo. Motor, 35 h. p., two cycle, air cooled, four cylinders, 3½ x 5, cast separately, power plant demountable; ignition by magneto, friction transmission operates on roller bearings in the middle, drive is by double chain two sets of brakes, expanding and transmission variety on the rear wheels and transmission tires 36 x 3 on Q. D rims; steering wheel at the right, 15 gal. gasoline tank under seat; frame of armored wood; springs, front and rear, full elliptic, wheel base 120 in. Equipment of lamps, horn and tools.

Ewing Gasoline Commercial Cars.

Made by the Findlay Motor Co., of Findlay, Ohio.

EWING MODEL A DELIVERY WAGON, $2,000

1000 lb. delivery wagon. Motor, 35 h. p., water cooled, under hood four cylinders 4⅜ x 4¾ cast in pairs, jump spark ignition from Bosch magneto; selective sliding gear, three speeds forward, direct shaft drive on third, multiple disc clutch, friction surfaces steel against bronze; front tires 36 x 4, rear tires 38 x 4½; semi-elliptic springs, front and rear, two sets of brakes; frame of pressed steel wheel base 106 in. Equipment, two oil lamps, one tail light, gas generator or Prest-O-Lite tank, and tool kit.



EWING MODEL B, $950

500 lb. delivery wagon. Motor, 15 h. p.; two cylinders 4¾ x 4¾, water cooled, tires 30 x 3 in., front and rear pneumatic; springs semi elliptic front, platform rear, wheel base 84 in. Other chassis details the same as Model A.

Economy Gasoline Commercial Cars.

Made by the Economy Motor Car Company, of Joliet, Ill.

ECONOMY MODEL 2, 1 TON TRUCK, $1,400.

Open body, capacity, 1 ton. Any style of body may be fitted. Motor located under seat, 20 h. p., water cooled two cylinders, 4⅜ x 4½ cast separately, power plant demountable; ignition by magneto and storage batteries; disc clutch with canvas facing; two speed planetary transmission integral with engine, direct on second speed; drive by chain one set of brakes expanding on the rear wheels; tires solid, 2½ in.; steering wheel at the right, gas tank under seat, frame of structural steel; front and rear springs, full elliptic; wheel base, 100 in. Equipment of lamps, horn and tools.

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ECONOMY MODEL 2, ½ TON, $1,150

Open body, capacity, ½ ton. Any type of body may be supplied. Tires, pneumatic, 30 x 4 on clincher rims, other chassis details are the same as Model 2

Monitor Gasoline Commercial Cars.

Made by the Monitor Automobile Works, Janesville, Wis.

MONITOR MODEL B-109, $1 500

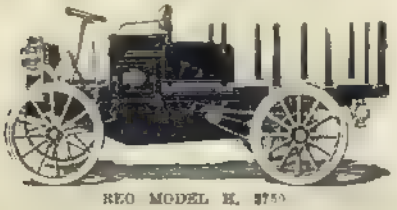
Open express body; capacity one ton. Motor, 24 h. p., water cooled, two cylinders, 5¼ x 4¾, cast separately, offset 5¾ in.; power plant demountable; ignition by Bosch magneto and dry cells, thermoid faced cone clutch; sliding selective roller bearing three speed transmission, located in the middle; drive by shafts, direct on third; two sets of brakes expanding and contracting on the rear wheels; steering wheel at the right; 15 gal. gasoline tank under seat; frame of pressed steel; front springs, semi elliptic, rear full-elliptic, wheel base 100 in. Equipment of lamps, horn and tools.

MONITOR MODEL D-110 $1 600

Wicker panel body; capacity one ton, upon the same chassis as Model B-109. A 12 passenger omnibus may also be had.

Reo Gasoline Commercial Cars.

Made by the Reo Motor Truck Co., Lansing, Mich.

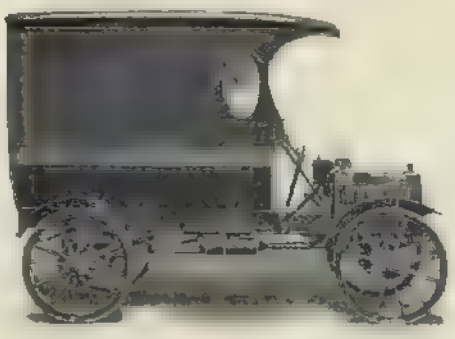


REO MODEL H, $750

Express body; capacity 1,500 lbs. Motor, single cylinder 4¾ x 6, water cooled, power plant demountable, ignition by magneto and dry cells; multiple disc clutch, two speed planetary transmission integral with engine drive by chains direct on high; two sets of brakes contracting on the rear wheels and jack shaft; tires solid, 36 x 2 front, 36 x 2½ rear; steering wheel at the left; frame of pressed steel; front springs, semi elliptic, rear full elliptic, wheel base 90 in. Equipment of lamps, horn and tools.

Crown Gasoline Commercial Cars.

Made by Crown Commercial Car Co., Philadelphia, Pa.



CROWN MODEL A-5 $1 250.

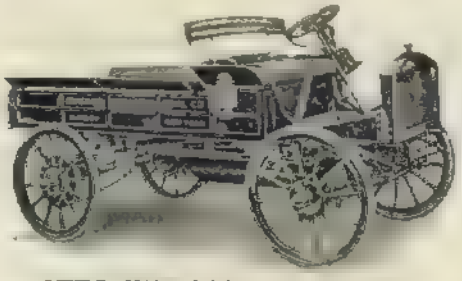
Panel body; capacity, 1,000 lbs. Motor, 20 h. p., water cooled; two cylinders, 5¼ x 4, cast singly power plant demountable, ignition by magneto and dry cells multiple disc clutch; sliding selective three speed ball bearing transmission, located in the middle; drive by chain, direct on third speed; two sets of brakes, contracting on the rear wheels and jack shaft, tires solid, 36 x 2½, front and rear; steering wheel at the right; 10 gal gasoline tank under seat, frame of structural steel front and rear springs, full-elliptic; wheel base 104 in. Equipment of lamps, horn and tools. Upon this chassis may also be mounted the following bodies: Screen, $1,250 combination delivery and touring car, $1,400; democrat, $1 075; democrat with flare boards and top, $1,150.

CROWN MODEL A 2 $1,100

Open express body; capacity, 1,000 lbs. Upon the same chassis as Model A-5

Little Giant Commercial Cars.

Made by the Chicago Pneumatic Tool Co., Chicago, Ill.



LITTLE GIANT DELIVERY CAR $1 00.

Open flare board delivery car, capacity 1,500 lbs. Motor, 20 h. p., located under seat, water cooled; two cylinders 5 x 4, cast separately, power plant demountable; ignition by storage batteries, magneto supplied if desired; two speed planetary transmission on the jack shaft; multiple disc clutch; drive by chain, direct on high, two sets of brakes expanding and contracting on the rear wheels tires solid steering wheel at the right; gasoline tank under seat; frame of structural steel; front springs ¾ elliptic, rear full-elliptic, wheel base 86 in. Equipment of lamps, horn and tools.

Geneva Gasoline Cars.

Made by the Geneva Wagon Co., of Geneva, N. Y.

GENEVA MODEL B OPEN EXPRESS, $1,900.

Motor, 20 h. p., under hood, four cycle water cooled, two cylinders, 5½ x 4½, cast singly; ignition by jump spark, multiple disc clutch with vulcanized fibre discs transmission two speed planetary on jack shaft, operating on ball bearings; drive by double chains; one set of expanding brakes thermoid lined on the rear wheels; tires solid, 3 in. front, 3½ in. rear; steering wheel at the right, frame of trussed wood; springs front and rear semi elliptic, wheel base 96 in.

GENEVA MODEL C PANEL DELIVERY $1,350.

The chassis details of this model are the same as those of the Model B open express.

Denniston Commercial Car.

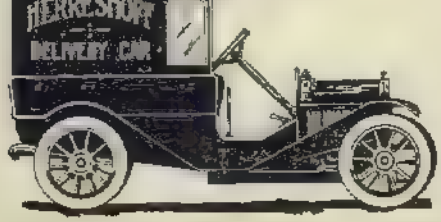
Made by the E. E. Denniston Company, Buffalo, N. Y.

DENNISTON COMMERCIAL CAR, $2,000

Motor, 15 h. p., water cooled, two cylinders, 4 x 4¾, ignition by Bosch magneto; multiple disc clutch three speed selective transmission, operating on ball bearings in the middle, drive by shaft, two sets of brakes expanding and contracting on the rear wheels and transmission; steering wheel at the left; gasoline tank on dash, capacity 8 gal.; frame of pressed steel; front springs semi-elliptic, rear ¾ elliptic; wheel base 94 inches

Herreshoff Gasoline Commercial Cars.

Made by the Herreshoff Motor Co., Detroit, Mich.



HERESHOFF MODEL 25 LIGHT DELIVERY WAGON, $950.

Motor, four cylinders, water cooled, 3⅛ x 3¾, cast en bloc; power plant demountable; ignition by Bosch magneto, multiple disc clutch, sliding selective three speed, ball bearing transmission; drive by shaft direct on third; two sets of brakes expanding and contracting on the rear wheels and transmission. Steering wheel at the right, nine gallon gasoline tank under seat; frame of pressed steel; springs front and rear, semi-elliptic; wheel base 98 inches. Equipment of lamps, with the option of either electric or acetylene.

Dayton Gasoline Commercial Cars.

Made by the Dayton Auto Truck Co., Dayton, Ohio.

DAYTON MODEL K COMMERCIAL CAR, $3,500

Stake body standard. Other bodies may be had to suit purchaser Carrying capacity, 3 tons. Motor, 45 h. p. four cycle water cooled, located underneath the seat; four cylinders, 4¾ x 5¼ cast in pairs, power plant demountable; ignition by magneto and dry cells; multiple disc clutch with phosphor bronze and steel plates, three speed sliding selective roller bearing transmission on the jack shaft; drive by chains; two sets of brakes expanding and contracting on the jack shaft and on the rear wheels, front tires 36 x 5 solid; rear tires, 36 x 6 dual solid, bolted on rims; steering wheel at the left; 20 gal. gasoline tank under seat; frame of structural steel; front springs semi-elliptic, rear, platform, wheel base 136 in.

Kearns Gasoline Commercial Cars.

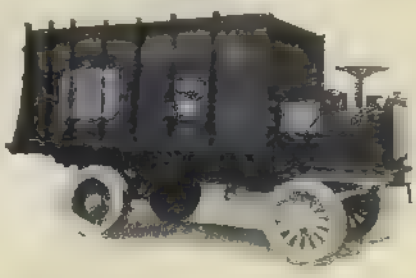
Made by the Kearns Motor Car Co., of Beavertown, Pa.

CLOSED PANEL CAR, $1,075.

This car may also be had with open delivery express body Motor, 20 h. p., two cycle, either air or water cooled as desired; two or three cylinders, cast separately, 4½ x 5 if water cooled, 4 x 4, air cooled, power plant demountable ignition by magneto and dry cells; friction transmission, direct drive on high speed, drive by chains, one set of expanding brakes on the rear wheels; tires, 34 x 2, solid front and rear.

Moeller Gasoline Commercial Cars.

Made by the New Haven Truck & Auto Works, New Haven, Conn.



MOELLER MODEL B, 5 TON TRUCK, $4,500

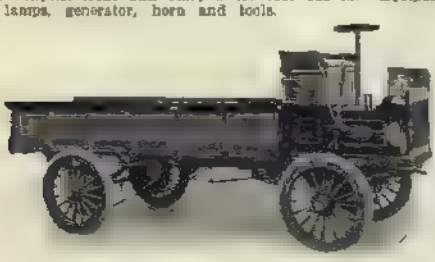
Motor 32.3 h. p., A. L. A. M., four cylinders, 4½ x 5, cast singly; multiple disc clutch; selective sliding transmission; three speeds forward, direct chain drive on third; jump spark ignition by magneto; frame of pressed steel; one set of brakes internal, expanding on rear wheels; tires solid rubber, 36 x 5 inches front, 36 x 5 dual rear.

Johnson Gasoline Commercial Cars.

Made by the Johnson Service Co., Milwaukee, Wis.

JOHNSON LIGHT DELIVERY WAGON, $1,500.

Panel body; capacity ½ ton. Motor, 35 h. p., water cooled, four cylinders, 4¼ x 4½, cast in pairs, offset ⅝ in., power plant demountable ignition by magneto and dry cells leather faced cone clutch; three speed ball bearing transmission, located in the middle, drive by shaft, direct on third; two sets of brakes expanding on the rear wheels, tires pneumatic, 33 x 3½, steering wheel at the right, gasoline tank under seat, frame of pressed steel springs, semi-elliptic, front and rear; wheel base 112 in. Equipment of lamps, generator, horn and tools.

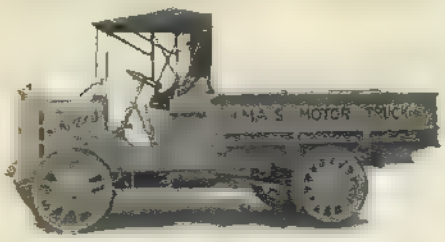


JOHNSON 1 TON TRUCK, $2,500.

Box or stake body; capacity 2 to 3 ton. Motor, 40 h. p., water cooled; four cylinders, 4½ x 5¼, cast in pairs, offset ⅝ in.; tires solid, 36 x 4, front and rear, frame of structural steel, wheel base 108 in. Other chassis details are the same as ½ ton car.

Mais Gasoline Commercial Cars.

Made by The Mais Motor Truck Co., Indianapolis, Ind.



MAIS 3000 TRUCK $2,750.

Express body or as desired; capacity 3,000 lbs. Motor, located under hood, 24 h. p., four cycle water cooled, four cylinders, 3⅛ x 5¼, cast in pairs, crank shaft bearings, F & S, ball; power plant demountable ignition by Eisemann magneto; two sets of spark plugs supplied; clutch of expanding shoe type, surfaces cast iron and phosphor bronze sliding progressive three speed transmission operating on F & S, ball bearings is integral with engine; drive is by internal gear, two sets of brakes contracting on the rear wheels and on the bevel pinion shaft front tires are solid 36 x 3½ rear 36 x 5, or 36 x 3 dual on Firestone rims the steering wheel is at the left; the gasoline tank under the seat; frame of channel steel; springs front and rear semi elliptic, wheel base 128 in.

MAIS 5000 TRUCK, $3,000.

Open stake body or as desired, tires are solid, 36 x 4 front and 36 x 6 or 36 x 3½ dual, rear. Other chassis details are the same as those of the 3,000 lb. model

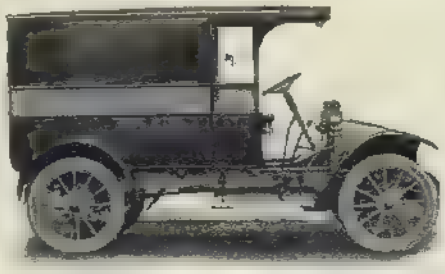
Franklin Gasoline Commercial Cars.

Made by the Franklin Automobile Co., of Syracuse, N. Y.

FRANKLIN 2,000 LB. TRUCK, $2,400

Motor located under seat, 18 h. p., air cooled; four cylinders, 3⅝ x 4, cast separately; power plant demountable ignition by magneto; multiple disc clutch; sliding selective

three speed transmission, operates on ball bearings in the middle, drive is by shaft, direct on third speed; two sets of brakes, contracting on the rear wheels and transmission; tires are pneumatic, 36 x 5½, on Q. D. rims; steering wheel at the right, gasoline tank under seat; frame of wood front springs, full coil elliptic, rear semi-elliptic coil; wheel base 84½ in.



FRANKLIN LIGHT DELIVERY WAGON, $2,350

1,000 lb. light delivery wagon. Motor, 25 h. p., air cooled, located under hood; four cylinders, 4 x 4, cast separately tires 36 x 4½, springs, full-elliptic, front and rear; wheel base 122 in. Other chassis details are the same as the 2,000 lb. truck

Kissel-Kar Commercial Vehicles.

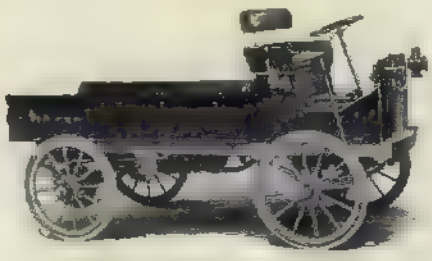
Made by Kissel Motor Car Co., Hartford, Wis.

KISSEL KAR 3-5 TON TRUCK.

Motor, 50 h. p., 4 cylinders, 4⅞ x 4¾, cast in pairs; water cooled, jump spark ignition selective sliding transmission, four speeds ahead, direct drive on fourth, shaft drive, cone clutch faced with leather; Timken roller bearing rear axle

Sanbert Gasoline Commercial Cars.

Made by the Sanford Herbert Company, Syracuse, N. Y.



SANBERT DELIVERY CAR, $1,500.

Open box delivery body illustrated. Open stake delivery may be had for the same price, and panel top for $1,625. The motor is located under the floor boards, and is of the two cycle type 25 h. p.; three cylinders, 4 x 4½, cast singly; power plant demountable, ignition by Bosch magneto, multiple disc clutch; two speed planetary transmission on the jack shaft; drive by chain; two sets of brakes contracting on the rear wheels, tires solid, 36 x 2½, front and rear, steering wheel at the right; 15 gal. gasoline tank under seat; frame of structural steel, front springs, semi elliptic, rear, platform; wheel base 88 in. Equipment of lamps, tools and speedometer

Autocar Gasoline Commercial Cars.

Made by The Autocar Co., Ardmore, Pa.

AUTOCAR MODEL XXI 3,000 LB., $2,150

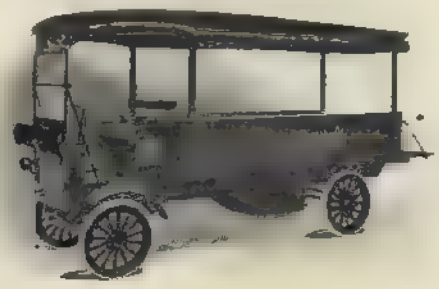
Price is for chassis alone; bodies optional and extra. Motor, 18 h. p., water cooled, two cylinders, 4¼ x 4½, cast singly, horizontal opposed; crank shaft bearings, ball; power plant demountable; ignition by magneto; multiple disc clutch; sliding progressive three speed, roller bearing transmission, located on the middle drive by shaft, direct on third, two sets of brakes expanding and contracting on the rear wheels; tires solid 3¼ x 3½ front, 3¼ x 4 rear; steering wheel at the right; 12 gal. gasoline tank at the rear of seat, frame of armored wood; front springs, semi-elliptic, rear platform; wheel base 97 in. Equipment of lamps and tools.

Brodesser Gasoline Commercial Cars.

Made by the Brodesser Motor Truck Co., Juneau, Wis.

BRODESSER MODEL A TRUCK

Capacity, 1500 to 2000 lbs. Motor 30-35 h. p., four cylinders, 4 x 5, cast in pairs; high tension Remy dual ignition system; friction transmission, tires 34 x 3½ inches solid front, 36 x 4 solid rear; front springs semi-elliptic rear springs platform; two sets of brakes expanding; 18 gal gas tank, 130 inch wheel base.



BRODESSER MODEL F-3, $3,500.

Three ton truck. Motor 45 h. p., four cylinders, 4½ x 5 cast in pairs, high tension Bosch dual ignition system, sliding selective transmission, three speeds forward; direct chain drive on third; cone clutch, leather faced, front tires 36 x 4 solid; rear tires 36 x 3½ dual, front springs semi-elliptic, rear springs platform, two sets of brakes expanding; wheel base 140 inches, 22 gal gas tank.

BRODESSER MODEL E-2, $2,750.

Two ton truck. Motor, 30-35 h. p., four cylinders, 4¼ x 5; high tension Bosch dual ignition system, front tires 36 x 3½ solid, rear 36 x 4; front springs semi-elliptic, rear springs platform. Other chassis details the same as Model F-3

BRODESSER MODEL C-1 $1,700.

One ton truck. Motor 26 h. p., four cylinders 4 x 4½ high tension Remy dual ignition system; friction drive transmission, front tires 36 x 2½ inches single; rear tires 36 x 3½ inches single; springs semi-elliptic front and rear, 13 gal. gas tank; wheel base 100 inches.

BRODESSER MODEL D-15 $3,100

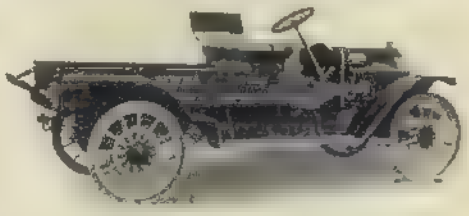
Chassis details the same as Model A.

Beyster-Detroit Commercial Gasoline Cars.

Made by Beyster-Detroit Motor Car Co., Detroit, Mich.

CLOSED BODY, $1,250

Also furnished with open body, $1,200; motor, 20 h. p., four cylinders, water cooled, 3¼ x 3½, cast in pairs; tires solid truck type, 3 inches front, 3½ inches rear; transmission planetary type, two speeds forward; direct chain drive on second, multiple disc type clutch, ignition, magneto and dry cell, wheel base 106 inches; springs semi-elliptic front, full elliptic scroll rear, brakes, internal expanding in rear



hubs, gas tank under seat; equipment two side, on tail one dome and trouble lamp (all electric), storage battery, horn and tools.

Avery Gasoline Commercial Cars.

Made by the Avery Company, of Peoria, Ill.

AVERY 3-TON TRUCK, $3,200.

Platform stake body, capacity 3 tons. Motor 45 h. p., water cooled, located under hood, four cylinders, 4½ x 5 cast singly, power plant demountable, ignition by magneto and storage batteries multiple disc clutch, sliding selective three speed transmission drive by chain, direct on third one set of brakes expanding on the rear wheels, front tires solid, rear twin solid, frame of structural steel, springs front and rear semi-elliptic, wheel base 140 in.

Clark Gasoline Commercial Cars.

Made by the Clark Power Wagon Co., Lansing, Mich.

CLARK MODEL A, $1,500.

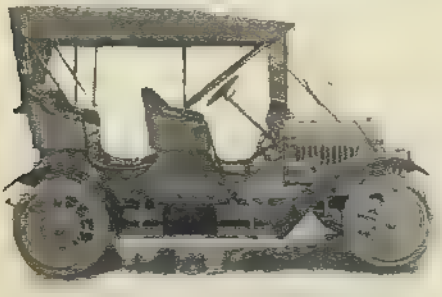
Capacity 1500 to 2000 lbs., express body standard, any

Lambert Gasoline Cars.

Made by the Buckeye Mfg. Co., Anderson, Ind.

LAMBERT MODEL 44 RUNABOUT, $1,000.

Two passenger runabout body. Motor 35 h. p. four cycle, water cooled, four cylinders, 4⅛ x 4¼ cast en bloc; crank shaft bearings, ball; power plant demountable; ignition by magneto and dry cells; friction transmission; drive by chains; two sets of brakes expanding and contracting on the rear wheels; tires front and rear pneumatic 30 x 3½ on Marsh rims; steering wheel at the right, gasoline tank at the rear, frame of pressed steel; front springs semi-elliptic, rear full elliptic; wheel base 100 in.



LAMBERT MODEL 55 SURREY, $1 075.

Four passenger, surrey body. Motor 35 h. p four cylinders 4⅛ x 4½. Other chassis details the same as Model 44.

LAMBERT MODEL 77 TONNEAU, $1 250.

Four passenger tonneau body tires, 32 x 3½; wheel base 107 in. Other chassis details the same as Model 55.

LAMBERT MODEL 88 TOURING CAR, $1,350.

Wheel base 112 in. Otherwise this car is the same as Model 77.

LAMBERT MODEL 100 TOURING CAR, $1,700.

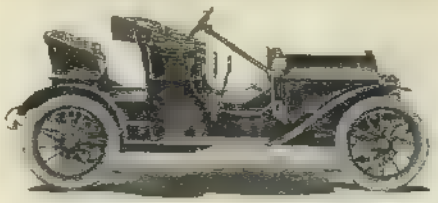
Motor, 40 h. p., four cylinder, water cooled; cylinders 4½ x 5 cast separately; crank shaft bearings plain; tires, pneumatic, 34 x 4; wheel base 117 in. Other chassis details the same as Model 44.

LAMBERT MODEL 101 TORPEDO, $1,600.

Tires 33 x 4; wheel base 112 in. Other chassis details the same as Model 55.

Mitchell Gasoline Cars.

Made by the Mitchell Lewis Motor Company, of Racine, Wis.



MITCHELL MODEL R RUNABOUT, $1 200.

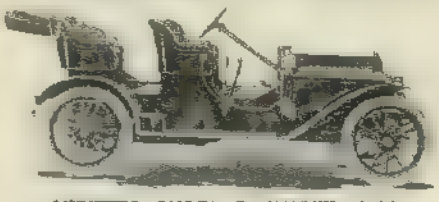
Three or four passenger with Rumble seat. Motor, 4 cycle water cooled, four cylinders, 4¼ x 5, cast in pairs; ignition by magneto and dry cells; leather faced cone clutch sliding selective three speed transmission, located in the middle, running on roller bearings, direct on high speed; drive by shaft; two sets of brakes expanding and contracting on the rear wheels; tires pneumatic, front and rear, 32 x 3½; steering wheel at the right; frame of pressed steel front springs semi-elliptic, rear ¾ elliptic; gas tank under seat, wheel base 100 in.

MITCHELL MODEL T TOURING CAR, $1 500.

Five passenger fore-door touring car body. Tires front and rear, 34 x 4; wheel base 112 in. Other chassis details the same as those of Model R.

MITCHELL MODEL S TOURING CAR, $2,250.

Five or seven passenger fore-door touring car. Motor, 6 cylinders, 4¼ x 5, cast in pairs; tires front and rear, 36 x 4½; front springs semi elliptic, rear platform; wheel base 130 in. Other chassis details are the same as Model R.



MITCHELL MODEL R SURREY, $1,250.

Built upon the same chassis as the R runabout.

Schacht Gasoline Cars.

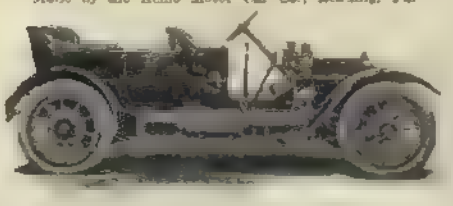
Made by the Schacht Motor Car Co., Cincinnati, Ohio.

SCHACHT MODEL AA TOURING CAR, $1,385.

Five or seven passenger touring car body. Motor, 40 h. p. four cycle water cooled; four cylinders, 4 5-16 x 5, cast en bloc, offset ⅝ in.; power plant demountable, ignition by Mea magneto, thermoid faced cone clutch; sliding selective three speed transmission located in the middle, operating on roller bearings; drive by shaft; two sets of brakes expanding and contracting on the rear wheel; tires, pneumatic, front and rear, 34 x 3½ at Q. D. rims; steering wheel at the

S. G. V. Gasoline Cars.

Made by the Acme Motor Car Co., Reading, Pa.



S. G. V. TOURING CAR, $2,500.

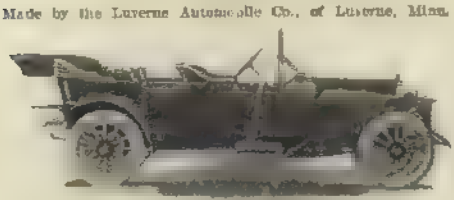
Five passenger touring car. Motor, 32½ h. p.; four cylinders, 3¾ x 4¾, cast en bloc, with integral inlet pipe ignition is by Bosch magneto, multiple disc clutch, transmission, four speed selective type, direct on fourth speed drive by shaft, two sets of brakes, expanding and contracting on the transmission and rear wheels, tires pneumatic, 34 x 4, on Q. D. rims; the frame is of pressed steel; front springs, semi elliptic, rear ¾ elliptic; wheel base 115½ in. Equipment of lamps, horn, tools. All exposed metal parts are covered with hard rubber, and lamps are enameled to conform with the color

S. G. V. CLOSE COUPLED, $2,500

Four passenger close coupled body, upon the standard S. G. V. chassis.

Luverne Gasoline Cars.

Made by the Luverne Automobile Co., of Luverne, Minn.

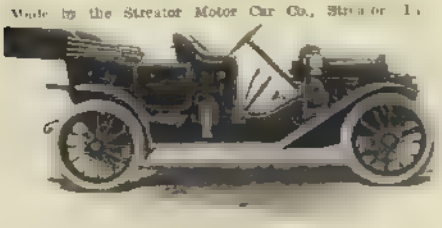


LUVERNE "40" FORE DOOR TOURING CAR, $2,500

Five or seven passenger, fore-door touring car. Motor, 40 h. p., water cooled, four cylinders, 4½ x 5, cast separately; power plant demountable; ignition by magneto and dry cells; multiple disc clutch, three speed ball bearing transmission; operated by [illegible] by shaft [illegible] brakes on rear wheels and contracting on the rear wheels; tires, pneumatic 36 x 4½, steering wheel at the left, 15 gal. gasoline tank under the seat; frame of pressed steel; front springs [illegible] rear full scroll elliptic; wheel base 12[illegible] equipment of lamps, horn [illegible] tire holder, tool rack, top, windshield [illegible]

"Halladay" Gasoline Cars.

Made by the Streator Motor Car Co., Streator, Ill.



HALLADAY 30 [illegible]

Five passenger touring car; roadster and surrey bodies may also be had. Motor 30 h. p., water cooled four cylinders, 4 x 4, cast singly, ignition by magneto and dry cells with two sets of spark plugs; leather faced cone clutch; sliding selective three speed transmission, operates [illegible] bearings on the rear axle, two sets of brakes expanding and contracting on the rear wheels, tires pneumatic 32 x 3½ front and rear, on Marsh rims; steering wheel at the right, 11½ gal. gasoline tank under seat, frame of pressed steel; front springs, semi elliptic, rear full elliptic; wheel base 104 in.

HALLADAY 30 ROADSTER, $1,250

HALLADAY MODEL 40, $1,700.

Five passenger touring car body. Roadster and toy tonneau may also be had. Motor 40 h. p.; four cylinders, 4½ x 5, multiple disc clutch, transmission located in the middle

HALLADAY 40 TOY TONNEAU, $1,700

HALLADAY 40 [illegible] STEEL [illegible]

[illegible] sets of brakes expanding on the rear wheels, tires [illegible] rear [illegible] rear axle, rear springs, ¾ elliptic; gasoline tank 14½ gal. capacity; wheel base 118½ in. Other chassis details are the same as Model 30.

HALLADAY MODEL 50, $[illegible]

Seven passenger touring car body. Roadster body may also be had. Motor 50 h. p., four cylinders, 4¾ x 5; multiple disc clutch, transmission located in the middle; tires, 36 x

HALLADAY MODEL 50 TOURING CAR $2650

4½ front and rear springs, ¾ elliptic; gasoline tank 22 gal. capacity; wheel base [illegible] in. Other chassis details are the same as Model [illegible]

Overland Gasoline Cars.

Made by the Willys-Overland Co., Toledo, Ohio.

OVERLAND MODEL 45, $775.

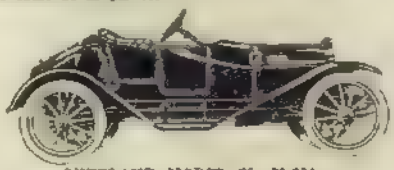
Two passenger roadster. Motor, 20 h. p., water cooled four cylinders, 3½ x 4½ cast singly, offset 9-16 in.; power plant demountable; ignition by magneto and storage batteries; multiple disc clutch; two speed planetary transmission on the rear axle, drive by shaft direct on high; two sets of brakes expanding and contracting on the rear wheels; tires pneumatic, 32 x 3, front and rear, on Universal rims; steering wheel at the right; 22 gal. gasoline tank at the rear; frame of pressed steel; front springs, semi elliptic, rear full elliptic; wheel base 96 in. Full equipment of lamps, generator, horn and tools.

OVERLAND MODEL 46, $850.

Two passenger torpedo roadster, upon the same chassis as Model 45.

OVERLAND MODEL 48, $1,095.

Five passenger fore-door touring car. It may also be had without fore-doors. Motor, 25 h. p., water cooled, four cylinders, 3¾ x 4½, cast separately, offset 9-16 in.; raybestos faced cone clutch; wheel base 102 in. Other chassis details are the same as Model 45.

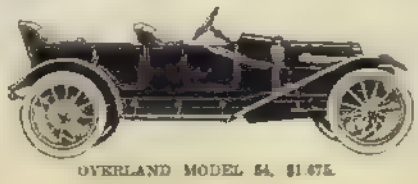


OVERLAND MODEL 50, $1,250.

Two passenger torpedo roadster. Motor, 30 h. p., four cylinders, 4 x 4½, raybestos faced cone clutch; tires, 34 x 4, rear springs, ¾ elliptic, 29 gal. gasoline tank at the rear; front springs, ¾ elliptic, wheel base 114 in. Other chassis details the same as Model 45.

OVERLAND MODEL 52, $1,500.

Two passenger torpedo roadster. Motor, 40 h. p., four cylinders, 4½ x 4½; raybestos faced cone clutch; tires, 34 x 4; rear springs, ¾ elliptic, 32 gal. gasoline tank at the rear; wheel base 118 in. Other chassis details are the same as Model 45.



OVERLAND MODEL 54, $1,675.

Five passenger torpedo touring car, built upon the same chassis as Model 53, with the exception that the gasoline tank of 20 gallons capacity is located under the seat.

OVERLAND MODEL 51, $ 250.

Five passenger fore-door touring car. It may also be had without fore doors. With the exception that the gasoline tank has a capacity of 13½ gallons, and is located under the seat, it is built upon the same chassis as Model 50.

OVERLAND MODEL [illegible], $1,350.

Five passenger fore door touring car. It may also be had without the fore door, multiple disc clutch, gasoline tank 14 gallons, under seat, wheel base 112 in. Other chassis details are the same as Model 50.

OVERLAND COUPE, $ 250.

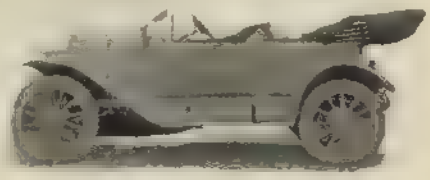
Three passenger coupe, tires 32 x 3½, wheel base 102 in. Other chassis details the same as Model 45.

Haynes Gasoline Cars.

Made by the Haynes Automobile Co., Kokomo, Ind.

HAYNES MODEL B, FOUR DOOR TOURING CAR, $3,000.

Seven passenger fore door touring car. Motor, 40 h. p., water cooled four cylinders, 5 x 5½, cast in pairs, power plant demountable; ignition by magneto and storage batteries; band clutch; sliding selective three speed transmission, integral with engine; drive by shaft, direct on third; two sets of brakes, expanding and contracting on the rear wheels; tires pneumatic, 36 x 4½, on Q. D. rims, steering wheel at the right; gasoline tank under seat; frame of pressed steel, front springs semi elliptic, rear ¾ elliptic, wheel base 125 in. Full equipment of lamps, gas tank, horn, tools, speedometer, top and wind shield.



HAYNES MODEL C, SUBURBAN, $2,000.

Five passenger fore-door body. Motor, 28 h. p., water cooled four cylinders, 4½ x 5, cast in pairs, offset ½ in.; ignition by magneto and dry cells, wheel base 114 in. Other chassis details are the same as Model B.

Locomobile Gasoline Cars.

Made by the Locomobile Company of America, Bridgeport, Conn.

LOCOMOBILE 30 TOURING CAR, $3,500.

Five passenger fore-door body, motor 4 cylinders, cast in pairs 4½ x 4½ in., 33 2-5 h. p., A. L. A. M. rating, water cooled with integral water jackets and honey comb radiator. Motor mounted on main frame, jump spark ignition with one set of spark plugs, storage battery for current. Locomobile carburetor, tank located under seat. Leather face cone clutch, operated by foot, drive by shaft, through sliding selective four speed transmission, direct on fourth speed. I-beam front axle of alloy steel, heat treated, full floating rear axle with two sets of brakes, expanding and contracting, lined with raybestos or thermoid, operated by foot and hand, tires front and rear 34 x 4½ on demountable rims, wheel bearings, roller. Steering gear worm and wheel, tie link in the rear of front axle, steering wheel at the right, frame of pressed steel, springs semi-elliptic, front and rear, wheel base 120 in., tread 56 in.

LOCOMOBILE 30 BABY TONNEAU, $3,500.

This model is upon the same chassis as the 30 touring car the only difference being that the front tires are 34 in. x 4 in.

48 TOURING CAR, $4,800.

Seven passenger, fore-door body, wheel base 135 in., tread 56 in., motor 6 cylinders cast in pairs, 4½ in x 4½ in., 48 2-5 h. p., water cooled, with integral water jackets and honey comb radiator, valves on opposite sides of the cylinder. The front tires are 36 x 4, rear 37 x 5; front springs, semi-elliptic, rear ¾ elliptic. Other chassis details same as the 30 touring car.

Cadillac Gasoline Cars.

Made by Cadillac Motor Car Co., Detroit, Mich.

THE CADILLAC "THIRTY," $1,700.

Touring car body, motor 32.4 h. p., four cycle water cooled, four cylinders 4½ in. x 4½, cast singly, offset ¾ in. Ignition by Bosch dual system with two sets of spark plugs. Schebler carburetor, gas tank under seat 18 gal. leather faced cone clutch, drive by shaft; sliding selective three speed transmission in the middle, running on annular ball bearings, two sets of brakes, expanding and contracting on the rear wheels; tires, front and rear, 34 x 4, pneumatic, steering wheel at the right. Frame of pressed steel, springs front semi-elliptic, rear ¾ elliptic; wheel base 116 in; tread 56 in.

THE CADILLAC "THIRTY" DEMI-TONNEAU, $1,700.

The chassis specifications of this model are the same as those of the "Thirty" touring car

THE CADILLAC "THIRTY" FORE-DOOR TOURING CAR, $1,800

The chassis specifications of this car are the same as those of the "Thirty" touring car

THE CADILLAC "THIRTY" TORPEDO, $1,850

This car is built upon the same chassis as that of the "Thirty" touring car

THE CADILLAC "THIRTY" COUPE, $2,250.

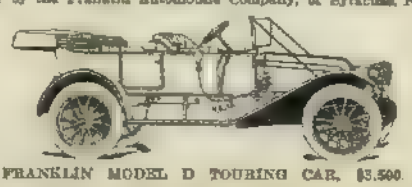
The chassis of this car is the same as that of the "Thirty touring car.

THE CADILLAC "THIRTY" LIMOUSINE, $3,000.

The specifications of this car are the same as those of the "Thirty" touring car, with the exception of the tires, which are 36 x 4½, front and rear

Franklin Gasoline Cars.

Made by the Franklin Automobile Company, of Syracuse, N. Y

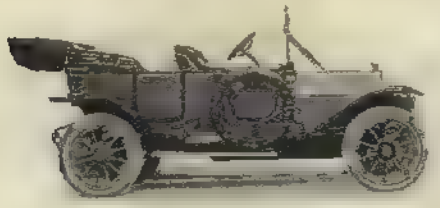


FRANKLIN MODEL D TOURING CAR, $3,500.

Five passenger touring car body illustrated; enclosed and torpedo may also be had. Motor, air cooled, 6 cylinders,

Velie Gasoline Cars.

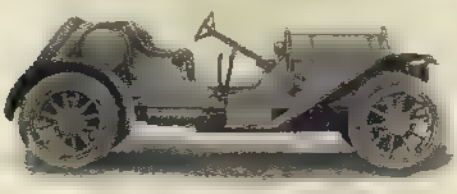
Made by the Velie Motor Vehicle Company, Moline Ill.



VELIE FORE-DOOR CAR, $2,500.

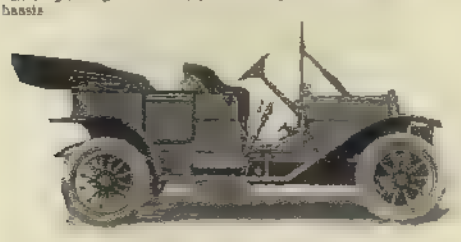
Five passenger fore-door car. The following bodies may be mounted upon this same chassis. Roadster, $1,800, torpedo roadster, $1,900; 4 passenger torpedo, $2,[illegible], coupe, $2,350 town car, $2,650; limousine, $3,000; landaulet, $3,000.

Motor, 40 h. p., water cooled four cylinders, 4¼ x 5¼ cast in pairs, offset, ⅞ in.; power plant demountable ignition by magneto and dry cells; dry plate clutch; sliding selective three speed roller bearing transmission in the middle; drive by shaft, direct on third; two sets of brakes expanding and contracting on the rear wheels, tires, 34 x 4, on demountable rims, steering wheel at the right; gasoline tank under seat; frame of pressed steel, front springs semi-elliptic, rear ¾ elliptic, wheel base 115 in. Full equipment of lamps, horn, Prest-O-Lite tank, tools.



VELIE RACYTYPE ROADSTER, $2,700.

Two passenger roadster, built upon the standard Velie chassis.



VELIE TOURING CAR, $1,800.

Standard touring car, built upon the Velie chassis.

VELIE TOY TONNEAU, $1,800.

Toy tonneau body, built upon the standard Velie chassis.

Pratt-Elkhart Gasoline Cars.

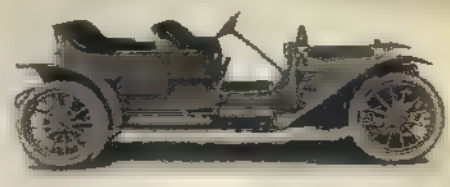
Made by the Elkhart Carriage & Harness Mfg. Co., of Elkhart, Ind.

PRATT ELKHART MODEL F, $1,800.

Five passenger fore-door body. Motor, water cooled; four cylinders 4⅛ x 4½ offset ⅜ in; power plant demountable ignition by Bosch dual system; asbestos faced cone clutch sliding selective three speed transmission integral with engine drive by shaft, direct on third, two sets of brakes expanding on the rear wheels, tires 34 x 4, front and rear, on Q. D. rims, steering wheel at the right; 15 gal. gasoline tank under seat, frame of pressed steel, front springs, semi-elliptic, rear ¾ scroll elliptic, wheel base 117 in. Equipment of lamps, horn and tools. The following bodies may also be had Five passenger touring, $1,750, two passenger roadster, $1,750, seven passenger limousine, $2,000.

Otto Gasoline Cars.

Made by the Otto Gas Engine Works, Philadelphia, Pa.



OTTO 5 PASSENGER TOURING CAR, $2,000.

This car is built upon the standard Otto chassis, upon which the following bodies may also be mounted: Victoria $2,250; coupe, $2,800, enclosed limousine, limousine, $3,250, landaulet, $3,250 and sportsmen's roadster, $2,150. Motor 30 h. p. water cooled, four cylinders, 4¼ x 4½, cast in pairs, offset ⅜ in.; power plant demountable; ignition by magneto and storage batteries; leather faced cone clutch sliding selective three speed transmission on the rear axle drive by shaft direct on high; two sets of brakes expanding and contracting on the rear wheels, tires, pneumatic on Q. D. rims, steering wheel at the right; 15 gal. gasoline tank under seat frame of pressed steel; front springs semi elliptic, rear ¾ elliptic; wheel base 123 in. Equipment of lamps, Prest-O-Lite tank, horn and tools.

OTTO FORE DOOR TOURING CAR, $2,150.

Four passenger fore-door car upon the standard Otto chassis.

OTTO ROADSTER, $1,950.

Two, three or four passenger roadster upon the standard Otto chassis.

Traveller Gasoline Cars.

Made by the Traveller Auto Co., Evansville, Ind.

TRAVELLER MODEL E, $1,500.

Five passenger fore-door body. Motor, water cooled four cylinders, 4 5-16 x 5½, cast in pairs, ignition by magneto and storage batteries; multiple disc clutch, sliding selective three speed transmission, operates on ball bearings on the rear axle, drive by shaft, direct on third; two sets of brakes expanding on the rear wheels; tires, 34 x 3½, front and rear; steering wheel to the right, gasoline tank under seat, frame of pressed steel, springs, semi-elliptic, front and rear wheel base 105 in.

34 x 4 front and rear, steering wheel right; 15 gal gasoline tank under seat, frame of pressed steel, front springs semi elliptic rear springs full elliptic; wheel base 112 in Equipment of top, windshield, pump and tools

STAFFORD ROADSTER, $1 [illegible]0

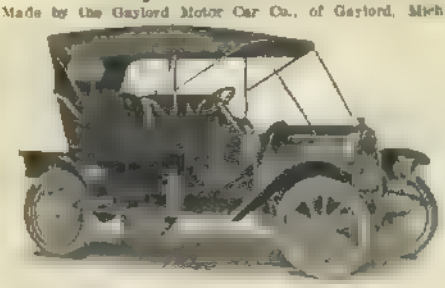
Two passenger roadster Chassis details the same as fore door touring car

STAFFORD OPEN TOURING CAR $2 250

Five passenger touring car Chassis details the same as fore door touring car

Gaylord Gasoline Cars.

Made by the Gaylord Motor Car Co., of Gaylord, Mich



GAYLORD UTILITY CAR $1 250.

Capacity 1 000 pounds. Motor, 35 h. p., water cooled four cylinders, 4 x 5, cast in pairs, power plant demountable ignition by magneto and dry cells, multiple disc clutch; sliding selective three speed roller bearing transmission on the rear axle, drive by shaft, direct on third, two sets of brakes, expanding and contracting on the rear wheels; tires, [illegible]matic, 32 x 3½ on Q. D. rims; steering wheel at the right; 13 gal. gasoline tank under seat; frame of pressed steel; front springs semi elliptic, rear, platform; wheel base 112 in. Equipment of lamps, generator and tools

This car is of the convertible type. Removable seats may be fitted on the body, giving it a carrying capacity for 4, 6 or 8 passengers.

Stevens-Duryea Gasoline Cars.

Made by the Stevens Duryea Co., Chicopee Falls, Mass.

STEVENS DURYEA MODEL AA TORPEDO

Five passenger torpedo body. Motor 48 8 h. p., A. L. A M., 6 cylinders, 4½ x 4½, cast in pairs, jump spark ignition from high tension magneto and storage battery, progressive sliding gear transmission three speeds forward direct shaft drive on third, multiple disc clutch; two sets of brakes contracting and expanding on both rear wheels, tires 36 x 4½ front and rear; wheel base 128 inches.

STEVENS-DURYEA MODEL X LIMOUSINE

Seven passenger [illegible] Motor 36.1 h. p., A. L. A M., four cylinders 4¾ x 4½, cast in pairs, under hood water cooled jump spark, tires 34 x 4 front and rear wheel base 124. Other chassis specifications the same as Model AA.

STEVENS DURYEA MODEL Y TOURING CAR

Seven passenger touring car. Motor, 54.1 h. p., A. L. A M. six cylinders, 4⅜ x 4½, cast in pairs, front tires 36 x 4, rear, 36 x 5; wheel base 148 inches. Other chassis specifications the same as Model AA

Alco Gasoline Car.

Made by the American Locomotive Co., New York City

ALCO 40 H. P TOY TONNEAU, $4,500

Motor 38.5 h. p., six cylinders, 4¾ x 1¾, cast in pairs water cooled; selective sliding transmission, four speeds forward; direct shaft drive on fourth two sets of brakes contracting and expanding on rear wheels front tires 36 x 4, rear tires 36 x 5; jump spark ignition from high tension magneto and storage battery, wheel base 136 in.

ALCO 40 H. P LANDAULET $5,500.

All chassis details are the same as Toy Tonneau.

ALCO 60 H. P. LIMOUSINE, $6,750

Motor 53.5 h. p., six cylinders, 1⅝ x 1¾, cast in pairs under hood, water cooled; multiple disc clutch, 12¼ in. [illegible], front tires 36 x 4, rear tires 36 x 5; two sets [illegible] contracting and expanding on rear wheels, jump spark ignition from high tension magneto and storage battery selective sliding transmission, four speeds forward, direct shaft drive on fourth; equipment complete.

ALCO 40 H. P. TOURING CAR $4 500

Seven passenger car upon the same chassis as the Toy Tonneau.

Clark Gasoline Cars.

Made by the Clark Motor Car Co. Shelbyville, Ind.

CLARK MODEL X TOURING CAR, $1,150.

Five passenger touring car. Motor, 30 h. p., water cooled, under hood, four cylinders, cast en bloc; selective sliding transmission three speeds forward, direct shaft drive on third; multiple disc clutch, front springs semi-elliptic rear springs full elliptic two sets of brakes on rear wheels tires 32 x 3½, on Q. D. rims; 15 gal gasoline tank, wheel base 114 in. Equipment of gas headlights, side oil lamps, tail lamp, horn, jack, tool kit, tire pump and repair [illegible]

CLARK MODEL A TOURING CAR, $1 250

Five passenger touring car. Tires 34 x 3½. Other chassis details the same as Model X.

CLARK MODEL C FORE DOOR TOURING CAR. $1 300

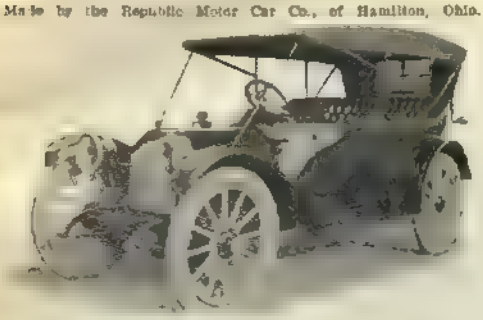
Five passenger fore-door touring car Tires 34 x 3½. Other chassis details the same as Model X.

CLARK MODEL B TORPEDO ROADSTER, $1 250

Tires 34 x 3½. Other chassis details the same as Model X

Republic Gasoline Cars.

Made by the Republic Motor Car Co., of Hamilton, Ohio.



REPUBLIC MODEL 101 FORE DOOR TOURING CAR.

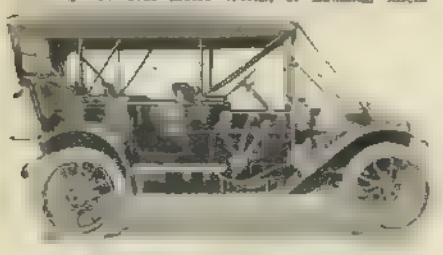
Five passenger, fore door body. Motor, 32 h. p., water cooled, four cylinders, 4¼ x 5, offset ¾ in., cast in pairs; ignition by magneto and dry cells, with two sets of spark plugs; leather faced cone clutch; sliding selective ball bearing, three speed transmission on the rear axle; drive by shaft; two sets of brakes expanding and contracting on the rear wheels; tires, 34 x 4 on Q. D. rims; steering wheel at the right; 16 gal. gasoline tank under seat; frame of pressed steel, front springs semi-elliptic, rear ¾ elliptic; wheel base, 116 in. Full equipment of lamps, Prest-O-Lite tank, speedometer, tools, top and wind shield.

REPUBLIC MODEL 102 TORPEDO. $2,200

Two passenger, torpedo body, on the same chassis as Model 101

Oldsmobile Gasoline Cars.

Made by the Olds Motor Works, of Lansing, Mich.



OLDSMOBILE SPECIAL. $3,000

Seven passenger touring car; close coupled roadster and limousine may also be had. Motor, 36 h. p., water cooled four cylinders, 4¾ x 4¾, cast in pairs; power plant demountable; ignition by magneto and storage batteries; leather faced cone clutch; sliding selective four speed transmission in the middle; drive by shaft; two sets of brakes, expanding and contracting on the rear wheels, tires pneumatic, 36 x 4 on Q. D. rims, steering wheel at the right, 22 gal. gasoline tank under seat, frame of pressed steel front springs semi-elliptic, rear ¾ elliptic; wheel base 118 in.

OLDSMOBILE AUTOCRAT. $3,500.

Seven passenger touring car, illustrated. Five passenger touring, roadster, tourabout and limousine bodies may also be had. Motor, 40 h. p., water cooled, four cylinders, 5 x 6, cast in pairs; tires, 36 x 4½, front and rear; wheel base 125 in. Other chassis details the same as the Oldsmobile Special.

OLDSMOBILE LIMITED. $5,000

Seven passenger touring car body illustrated. Five passenger touring roadster, tourabout and limousine bodies may also be had. Motor, 60 h. p. water cooled, six cylinders, 5 x 6, cast in pairs; tires 48 x 4½; wheel base 138 in. Other chassis details the same as the Oldsmobile Special.

Midland Gasoline Cars.

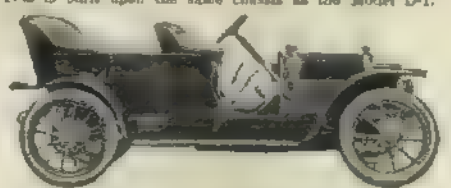
Made by the Midland Motor Company, of Moline, Ill.

MIDLAND MODEL L-1 TOURING CAR, $2,000

This chassis may be had with roadster body at $1,950, toy tonneau at $3,000. Motor, 40 h. p. water cooled, four cylinders, 4½ x [illegible] power plant demountable; ignition by magneto and dry cells, disc clutch; sliding selective three speed, roller bearing transmission integral with engine, drive by shaft, two sets of brakes expanding on the rear wheels, tires, pneumatic, 34 x 4 on Marsh rims; steering wheel at the right; 13 gal. gasoline tank under seat; frame of pressed steel, front springs semi-elliptic rear ¾ elliptic; wheel base, 115 in. Full equipment of lamps, horn, tools.

MIDLAND MODEL L-2 TOY TONNEAU, $2800

This is built upon the same chassis as the Model L-1.



MIDLAND MODEL R TOURING CAR, $2,250.

Motor, 50 h. p., water cooled, 4½ x 5; tires, 36 x 4, rear springs, full elliptic, gasoline tank, 18 gal, under seat, wheel base, 118 in. Other chassis details the same as Model L-1.

Paterson Gasoline Cars.

Made by W. A. Paterson Co., of Flint, Mich.

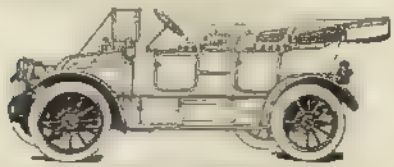
PATERSON MODEL A TOURING CAR. $1,295.

Five passenger touring car body, illustrated. Fore-door and demi-tonneau bodies may also be had. Motor, 26 h. p., water cooled, four cylinders, 4 x 4, cast in pairs; ignition by magneto and dry cells; leather faced cone clutch; sliding

4 x 4, cast singly; power plant demountable; ignition by magneto; multiple disc clutch with bronze and steel discs sliding selective, ball bearing, three speed transmission, located in the middle, direct on high; drive by shaft, three sets of brakes, contracting on the rear wheels and transmission; front tires, 30 x 4½; rear 37 x 5 on Q D rims steering wheel at the right, gasoline tank under seat; frame of armored wood, springs full elliptic; wheel base 124 in. Top and full equipment.

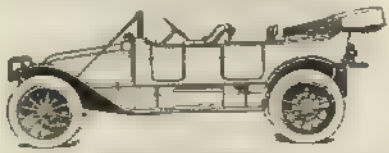
FRANKLIN MODEL M TOURING CAR, $2,700.

Motor, four cylinders 4 x 4; front tires 34 x 4, rear 34 x 4½, wheel base 108 in. Other chassis details are the same as Model D.



FRANKLIN MODEL G TOURING CAR, $1,950

Four passenger touring car body; motor, four cylinders, 3⅜ x 4, front tires 32 x 3½, rear 32 x 4; wheel base 100 in. Other chassis details are the same as Model D.



FRANKLIN MODEL H TOURING CAR, $4,000

Seven passenger touring car body, closed, and torpedo may also be had. Motor, six cylinders, 4½ x 4½; front tires 37 x 5, rear 36 x 5¼, wheel base 133 in. Other chassis details the same as Model D.

FRANKLIN MODEL G RUNABOUT, $1,950

Two passenger runabout body, gasoline tank at the rear wheel base 100 in. Otherwise the chassis details are the same as the Model G touring car.

Fiat Gasoline Cars.

Made by the Fiat Automobile Company, of New York City

FIAT 35 H. P. CAR $4,500.

Seven passenger car illustrated. It may be had with or without fore-doors in two, four or five passenger bodies. Motor, 35 h. p., water cooled, four cylinders, 4 2-5 x 6, cast monobloc; power plant demountable; ignition by magneto and storage batteries, multiple disc clutch; sliding selective, four speed, ball bearing transmission, located in the middle direct on fourth; drive by shaft, two sets of brakes, expanding and contracting, on rear wheels and propeller shaft; tires pneumatic, 36 x 4½; steering wheel at the right; 30 gal. pressure gasoline tank at the rear; frame of special steel; front springs semi-elliptic, rear ¾ elliptic, wheel base 123 in.

Nance Six Gasoline Cars.

Made by the Nance Motor Car Co., of Philadelphia, Pa.

NANCE SIX TOURING CAR, $1,900.

Five passenger touring car, fore door body, illustrated. This chassis may also be had with a fore door runabout body seating two. Motor, 35 h. p., water cooled, six cylinders, 3⅝ x 4 1-16, cast in pairs; ignition by Bosch dual system, multiple disc clutch; sliding selective, three speed, ball bearing transmission, integral with engine; drive by shaft, two sets of brakes, expanding and contracting on the rear wheels; tires 34 x 3½ on Q. D. rims; steering wheel at the right; 16 gal. gasoline tank under seat in touring car, at the rear, 24 gal., in roadster; frame of pressed steel, front springs semi-elliptic, rear ¾ elliptic; wheel base 123 in. Full equipment of lamps, generator and top.

Welch Gasoline Cars.

Made by The Welch Company, of Detroit, Mich.

WELCH MODEL T TOURING CAR, $2,100

Motor, 40 h. p., at 1,600 r. p. m., four cycle water cooled, four cylinders 5 x 5, cast in pairs; ignition by Bosch magneto, four dry cells; leather faced cone clutch, drive by shaft, through three speed sliding gear transmission, running on ball bearings; two sets of brakes expanding and contracting on the rear wheels, pneumatic tires, front 36 x 4, rear 36 x 4½ on Q. D. rims, steering wheel at the right gas tank 18 gals. capacity, under seat; frame of pressed steel; springs front and rear semi-elliptic; wheel base 122 in. Full equipment of lamps, horn, tools, wind shield, speedometer and shock absorbers.

Crawford Gasoline Cars.

Made by the Crawford Automobile Co., of Hagerstown, Md.

THE CRAWFORD 11-30 TOURING CAR, $1,375

Motor, 30 h. p., at 1,500 revs. per minute, four cycle water cooled; four cylinders, cast in pairs, 4¼ x 4½, offset ⅛ in.; ignition by magneto and dry cells; leather faced cone clutch; drive by shaft, sliding selective three speed transmission running on ball and roller bearings on the rear axle; two sets of brakes expanding and contracting on the rear wheels; tires front and rear, 34 x 3½ on Q. D. rims, steering wheel at the right; gas tank under seat; front springs semi elliptic, rear full elliptic.

THE CRAWFORD 11-35 FORE-DOOR TOURING CAR, $1,650

Motor, 35 h. p., four cylinders, 4⅛ x 4½; tires front, 34 x 4, rear 34 x 3½. Other chassis details are the same as those of the 11 30 touring car.

ELEVENTH ANNUAL

Complete Motor Car Review

Comprising all 1911 Models of all American Motor Car Manufacturers

See Price and Classified Indexes, pages 249-253a

Motorcycle Review will be found on page 244

Gasoline Pleasure Cars

Maxwell Gasoline Cars.

Made by Maxwell-Briscoe Motor Co., Tarrytown, N. Y.

MAXWELL E A TOURING CAR, $1,400

Five passenger touring car; motor 36 h. p., four cylinders, 4 cylinders 4½ x 4½ double ignition, magneto and battery with non vibrating coil, sliding gear transmission, three speeds forward; direct shaft drive on third; multiple disc clutch, all metal, pressed steel frame; tires 34 x 4, Clincher rims; wheel base 110 inches; front springs semi elliptic, rear ¾ elliptic scroll; two sets of brakes expanding and contracting; 14 gal. gas tank. Complete equipment.

MAXWELL MODEL G A TOURING CAR $1,400

Chassis details the same as Model E A.

MAXWELL MODEL G A ROADSTER, $1,400

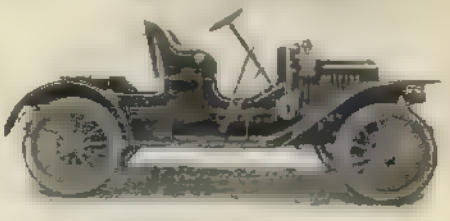
Two passenger roadster, upon the same chassis as Model E A.

MAXWELL MODEL L TOURING CAR $950

Motor, 25 h. p., four cylinders, 4 x 4, cast in pairs, wheel base 104 inches; [illegible] gasoline tank; tires 32 x 3½ on Clincher rims; full equipment; other chassis details the same as Model E A.

MAXWELL Q 3-11 TOURING CAR $8,000

Motor 32 h. p., four cylinders 3½ x 4, cast in pairs; wheel base 93 inches; 10 gal. gas tank; equipment, magneto, two oil side lights, one oil tail light, horn, full set of tools, tire repair kit. Other details same as Model E A.



MAXWELL MODEL Q-11 RUNABOUT $750

Chassis details the same as Model Q 3-11.

MAXWELL MODEL A B, $600

Motor 22 h. p., two cylinders, 4½ x 4, horizontal opposed. Transmission planetary type, two speeds forward; direct drive on high; transmission enclosed and runs in oil; tires 28 x 3 inches, Clincher rims; wheel base 80 inches, 10 gal. gas tank; full equipment.

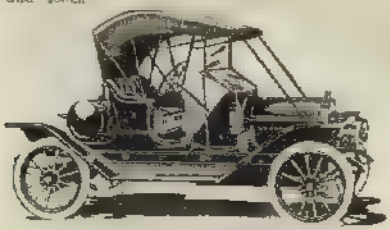
Stafford Gasoline Cars.

Made by the Stafford Motor Car Co., Kansas City, Mo.

STAFFORD FORE DOOR TOURING CAR, $2,350

Motor, 30 h. p., water cooled four cylinders 4⅛ x 4½, cast in pairs. Motor located [illegible] top; Spark ignition; Bosch [illegible]; three speeds forward, direct shaft drive on third, cone clutch faced with phosphor bronze running against steel; two sets of brakes expanding and contracting on rear hubs; tires

selective, three speed, ball bearing transmission, integral with engine drive by shaft, direct on third, two sets of brakes, expanding and contracting on the rear wheels; tires pneumatic on Q. D. rims, steering wheel at the right, 14 gal. gasoline tank under seat; front springs semi elliptic, rear full elliptic wheel base 106 in.; equipment of lamps, generator and tools.



PATERSON MODEL F ROADSTER, $1,200.

Two passenger roadster body, upon the same chassis as Model A.

PATERSON MODEL H FORE DOOR, $1,600.

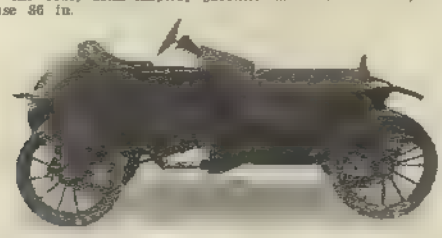
Five passenger, fore door or touring car bodies may be had. Motor, 33 h. p., water cooled, four cylinders, 4¼ x 4½, cast in pairs; springs front and rear semi elliptic; wheel base 118 in. Prest-O-Lite tank supplied with regular equipment. Other chassis details are the same as Model A.

Hupmobile Gasoline Cars.

Made by the Hupp Motor Car Co., of Detroit, Mich.

HUPMOBILE RUNABOUT, $750.

Motor, 20 h. p., located under hood, four cycle water cooled; four cylinders, cast in pairs, 3¼ x 3½, offset ⅜ in., power plant demountable, ignition by Bosch magneto; multiple disc clutch with 16 steel discs; drive by shaft; sliding selective two speed transmission, two sets of brakes internal expanding in the rear wheel drums; tires pneumatic, 30 x 3 on clincher rims; steering wheel at the right; frame of pressed steel, front springs semi elliptic, one cross spring at the rear, semi-elliptic; gasoline tank at the rear; wheel base 86 in.



HUPMOBILE TORPEDO, $850.

The chassis details of this model are the same as those of the runabout.

HUPMOBILE TOURING CAR, $900.

This car, seating four, is built upon the same chassis as the runabout, except wheel base, 110 in.; rear tires, 31 x 3½ in.

HUPMOBILE COUPE, $1,100.

The tires on this model are 30 x 3 front 31 x 3½ rear. Other chassis details are the same as those of the runabout.

Moon Gasoline Cars.

Made by the Moon Motor Car Co., of St. Louis, Mo.

MOON "30" TOURING CAR, $1,500.

Five passenger, touring car body. Motor, water cooled, four cylinders, 4¼ x 5, cast in pairs, power plant demountable, ignition by magneto and dry cells; multiple disc clutch; sliding selective, three speed, roller bearing transmission on the rear axle drive by shaft. Two sets of brakes, expanding and contracting on the rear wheels, tires, pneumatic 34 x 3½ on Q. D. rims; steering wheel at the right; 16 gal. gasoline tank under seat frame of pressed steel, front springs semi-elliptic, rear ¾ elliptic; wheel base, 114 in. Full equipment of lamps, generator, horn and tools.

MOON MODEL "45" TOURING CAR, $3,000.

Five or seven passenger touring car. It may also be had in torpedo, fore door, toy tonneau or limousine bodies. Motor water cooled four cylinders, 4¾ x 5, cast in pairs. Ignition by Bosch dual system; sliding selective, four speed, transmission in the middle; tires, 35 x 4 front, 36 x 4½ rear, wheel base, 121 in. Other details the same as Model "30."

Winton Gasoline Cars.

Made by the Winton Motor Car Co., of Cleveland, Ohio.

WINTON SIX TOURING CAR, $3,000.

Five passenger touring car body illustrated. This chassis may be fitted with any type of body desired. Motor, 48 h. p., water cooled, six cylinders, 4½ x 5, cast in pairs, offset ½ in.; ignition by Bosch dual high tension and Eisamann dual low tension systems, with Exide storage batteries; multiple disc clutch; sliding selective, ball bearing, four speed transmission, located in the middle; drive by shaft direct on third, two sets of brakes, expanding and contracting on the rear wheels; front tires 35 x 4½ rear 36 x 4½ on Q. D. rims, steering wheel at the right; gasoline tank at the rear 23 gal. capacity; wheel base 124 in. Full equipment of lamps, gas tank or generator, horn, tools and self-starting device.

Jackson Gasoline Cars.

Made by the Jackson Automobile Co. Jackson, Mich.

JACKSON MODEL 51 TOURING CAR, $2,200

Five passenger touring car body. Motor, four cylinder, water cooled, cylinders, 4½ x 4¾, power plant demountable; ignition by magneto and storage battery, multiple disc clutch, sliding selective three speed ball bearing transmission, [illegible] with engine [illegible] shaft drive, [illegible] wheel brakes, one expanding and contracting on the rear wheels, tires, front 36 x 4 rear 36 x 4½, non skid rear on Q. D. rims; steering wheel at the right gasoline tank under seat, frame of pressed steel full elliptic front and rear wheel base 120 in. Equipment of lamps, tools and [illegible]

JACKSON MODEL 41 $1,700

Five passenger touring car body. Motor, four cylinders 4½ x 4½, cast in pairs; tires, 34 x 4, front and rear wheel base 110 in. Other chassis details are the same as Model 51

JACKSON MODEL 38 $1,650

Five passenger torpedo body. Motor, water cooled four cylinders, 4⅜ x 4½, cast in pairs, offset ½ in. tires, 34 x 4 front and rear, steering wheel at the left; wheel base 110 in. Other chassis details are the same as Model 51

JACKSON MODEL [illegible] $1,650

Five passenger touring car body. Motor, water cooled; four cylinders, 4 x 4 cast in pairs, leather faced cone clutch; tires, 32 x 3½, wheel base 105 in. Other chassis details are the same as Model 51

JACKSON MODEL 30. $1,250

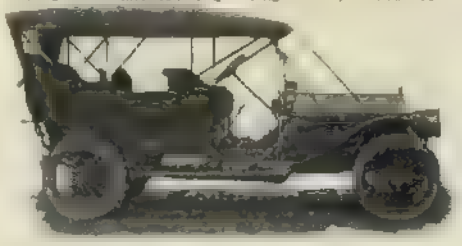
Five passenger touring car. Motor four cylinders, 4 x 4 cast in pairs; tires, 32 x 3½; wheel base 105 in. Other chassis details are the same as Model 51

JACKSON MODEL 20 $ 0%

Two passenger roadster. Motor 4 [illegible] 4 x 4 cast in pairs [illegible] x 3½ wheel base 1[illegible] in. Other chassis details are the same as Model 51

Chadwick Great Six Gasoline Cars.

Made by the Chadwick Engineering Works, Pottstown, Pa.



CHADWICK TOURING CAR, $5,500.

Seven passenger touring car body. Limousine may also be had for $6,[illegible] Motor six cylinder, water cooled, [illegible] x 6 cast [illegible] power plant demountable, ignition by magneto and storage batteries, with two sets of spark plugs, internal band clutch, surfaces leather and cast iron, sliding semi selective, four speed transmission, operates on [illegible] wheels by double chains [illegible] two sets of brakes, one expanding on the rear wheels and one on the transmission; tires, 36 x 4 front, 37 x 5 rear on demountable rims; steering wheel at the right gasoline tank under seat, frame of pressed steel, [illegible] springs, semi elliptic, rear platform wheel base 133 in. Full equipment of lamps, horn, tools, Prest-O-Lite tank.

CHADWICK TOURABOUT, $5,500

Five passenger tourabout body. Torpedo body may also be had for $5,650. Tires are 36 x 4½, front and rear Other chassis details are the same as the Touring Car

CHADWICK RUNABOUT, $5,500.

Two passenger runabout. Tires, 36 x 4½, gasoline tank at the rear, wheel base 112 in. Other chassis details are the same as the Touring Car

Everitt "30" Gasoline Cars.

Made by the Metzger Motor Car Company, Detroit, Mich.

EVERITT [illegible] FORE DOOR TOURING CAR $1,400.

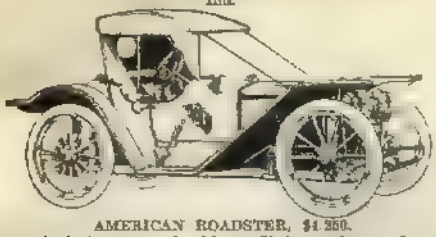
Five passenger fore door touring car. Motor, 30 h. p., water cooled, four cylinders, 4 x 4½, cast en bloc, power plant demountable; ignition by Bosch mag eto, leather faced cone clutch, sliding selective three speed transmission, on the rear axle, drive by shaft direct on third, two sets of brake expanding and contracting on the rear wheels, tires [illegible] Q. D. rims, steering wheel at the right gasoline tank under seat, frame of pressed steel; front springs, semi-elliptic, rear, full elliptic, wheel base 110 in. Equipment of lamps, generator, horn and tools

EVERITT "30" ROADSTER, $1,500

Two passenger fore-door roadster, upon the same chassis as the Touring Car.

American Gasoline Cars.

Made by the American Motors Company, of Indianapolis, Ind.

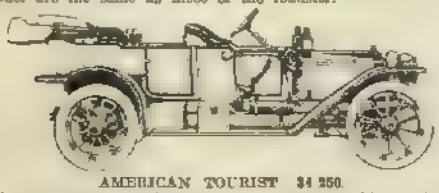


AMERICAN ROADSTER, $1,250.

Torpedo body seating 2. Motor, 50 h. p., four cycle water cooled, four cylinders, 5¼ x 5½, cast in pairs, offset 15-16 in.; ignition by dual system with magneto and storage battery, Thermoid faced cone clutch, sliding selective four speed ball bearing transmission in the middle, direct drive on fourth speed, driven by shaft; two sets of brakes expanding on the rear wheels, tires pneumatic 40 x 4, front and rear on demountable rims; steering wheel at the right; gas tank at the rear; frame of pressed steel; springs, front and rear, semi-elliptic; wheel base 112 in.

AMERICAN TRAVELER, $4,250.

Torpedo body, five passengers. Chassis details of this model are the same as those of the roadster.



AMERICAN TOURIST $4,250.

Seven passenger flush sided body. Tires are 36 x 4 front, 36 x 5 rear; gasoline tank under the seat; wheel base 124 in. Otherwise the chassis is the same as that of the roadster.

Marmon Gasoline Cars.

Made by Nordyke & Marmon Co., Indianapolis, Ind.

MARMON 32, TOURING CAR, $3,750.

Five passenger, closed front touring car. It may also be had without fore-doors. Motor, 32.4 h. p., water cooled, four cylinders, 4½ x 5, cast in pairs; ignition by Bosch dual system; asbestos faced cone clutch; sliding selective three speed transmission, operates on ball bearings on the rear axle drive by shaft, direct on high, two sets of brakes expanding on the rear wheels; tires pneumatic; 34 x 4, on Q. D. rims steering wheel at the right; 17 gal. gasoline tank under seat; frame of pressed steel; front springs, semi-elliptic, rear full elliptic; wheel base 120 in.

MARMON 32 SUBURBAN $3,750.

Four passenger fore-door body, upon the same chassis as the Touring Car.

MARMON 33 ROADSTER, $3,750.

Two passenger fore-door roadster, upon the same chassis as the Touring Car.

Rider-Lewis Gasoline Cars.

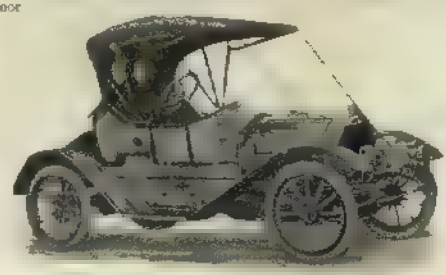
Made by The Rider Lewis Motor Car Co., of Anderson, Ind.

MODEL G, FORE-DOOR FIVE PASSENGER CAR, $1,300.

Motor, 30 h. p., four cycle water cooled, four cylinders 4⅛ x 4½, cast singly; ignition by magneto and dry cells, two sets of plugs; sliding gear transmission in the middle giving three speeds, roller bearings used; drive by shaft, leather faced cone clutch, two sets of brakes expanding and contracting on the rear wheels; tires front and rear, 34 x 3½ pneumatic on Goodyear rims; steering wheel at the right, gas tank 18 gals. capacity under seat; frame of pressed steel; springs front and rear full elliptic; wheel base 110 in.

RIDER-LEWIS MODEL F TOURING CAR, $1,250.

The chassis details are the same as the Model G Fore-Door.



MODEL H ROADSTER, $1,350.

This car is built upon the same chassis as the Model G Fore-Door.

Continental Gasoline Cars.

Made by The Indiana Motor Sales Co., Indianapolis, Ind.

CONTINENTAL TOURING CAR, $1,400.

Five passenger touring car illustrated. The following bodies may also be had: Roadster, $1,450; fore-door touring car $1,500. Motor, 36 h. p.; four cylinders, 4⅝ x 4½, cast en bloc; ignition by dual system, with Remy magneto; multiple cone clutch; sliding selective three speed transmission on the rear axle, two sets of brakes expanding and contracting on the rear wheels; tires pneumatic, 34 x 3½ on Q. D. rims; frame of pressed steel; front springs, semi-elliptic, rear full-elliptic scroll, wheel base 118 in.

Brictson Treads Win Twin City-Helena Auto Tour

Minneapolis Journal
July 25th

The Great Northern Train, from Havre to Helena, was double-headed and the engines sidetracked. By the token the automobile trip was a hurry one today, up grades and long hills. Additional trouble arose from the rarity of the atmosphere, which affected carburetors and nearly made the motor engines useless. They refused to take hold. Pressure on the gasoline gage ran low on the heights and went back slowly only when the valley was reached again. Water ran low easily, which made trouble for some of the cars with low carrying capacity on long runs. With all this the Brictson Pierce-Arrow Press Car, carrying seven passengers, 86 horse power, yesterday made nearly 12 miles on each gallon of gasoline consumed.

Minneapolis Tribune
July 27th

Brictson Treads again saved the day for the Press gang when the car skidded over a smooth road and suddenly came to a halt. Up in the air they all went but the car did not skid off into the ditch.

It is interesting to note that the Pierce has not suffered tire trouble.

The accompanying photograph shows Mr Brictson's 1911 66 H.P. seven-passenger Pierce-Arrow, fully equipped with the famous Heavy Car Type "BRICTSON DETACHABLE TREADS," which was the Official Press Car in the Twin City-Helena Auto Tour that took place July 20-28, 1911

This particular car carried seven passengers, together with baggage, press cameras, etc., aggregating a total weight of 6500 pounds, throughout the entire tour. The object of driving this heavy car fully equipped with BRICTSON DETACHABLE TREADS was to prove to the public that BRICTSON TREADS are money savers. This exceptionally severe demonstration, given under the eyes of the motoring public, must certainly prove to the most skeptical that BRICTSON TREADS

Will Positively Not Rust, Chafe, Rot or Injure the Tire in Any Way

but that they are real "TIRE ECONOMY."

Let us get down to actual figures. There were 22 cars in this tour, on which there were replaced 200 new tubes and 90 new casings, which makes a total cost of $8200.00, an average tire expense on each car of $256.00, as against not a single cent tire expense on the Official Press Car, which was fully equipped with "BRICTSON DETACHABLE TREADS."

We might also add in this connection that the Official Press Car ran a great deal faster and covered a great many more miles than any other car in the tour, for the fact that it carried one of the Official Time Checkers, who had to get into the controls before the rest and check them in. The Press people wanted to gather all the news they possibly could, and it was therefore necessary for the Official Press Car to start last and finish first, and in addition to this had to make special stops at certain points, so that the Press people could send in their articles as they picked up on the route. The trip for the Press car did not cease at Helena, but proceeded on a journey to the Glacier National Park, a distance of something over 300 miles, crossing the great Continental Divide in the Rockies, and went as far as an automobile had ever gone before ventured, ending up at Belton, Montana, three miles from Lake McDonald, the entrance to Glacier National Park. The total mileage the car covered from the time it left Brookings until its return, was 2496 miles. On account of limited space we will be obliged to leave photographs of the rubber tires and treads, as they looked at the completion of the trip, for some future number.

St. Paul Pioneer Press
July 26th

Thelma Brictson who stuck to the Press car all the way, was the youngest member of the party. It was Thelma's mother and sister who when they heard the original Press car had been withdrawn offered their places in Mr. Brictson's car for the newspapermen. The latter were fortunate in getting this car. Equipped with Brictson Tire Treads which Mr. Brictson invented, the car was in perfect shape and never experienced an instant of delay. Most of the cars had more than five blowouts each during the long run. Over 200 blowouts were reported on other cars.

Minneapolis Journal
July 25th

The Brictson Pierce-Arrow Press car is the marvel of the tour. It has traveled more than any entered car, has had no trouble, save no chains because of the Brictson Treads, and has used only a quart of water since departure from Brookings for the start at Minneapolis.

It is no longer a question as to whether or not the BRICTSON TREADS are really practical. This test proves it. The accompanying are clippings taken from Minneapolis and St. Paul papers.

TO DEALERS— We are going to establish an exclusive agency in every city and town and have a very interesting proposition to offer. Fill our and mail coupon to the left, and immediately upon receipt of same I will mail my new 1911 catalogue to you, together with my exclusive agency proposition and contracts for your approval. Don't delay! Write today, for we give only one exclusive agency in each place.

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O. A. Brictson, Pres.,
The Brictson Mfg. Co.
4101 Brictson Bldg., Brookings, S. D.

Without obligation on my part, send me your exclusive Agency Proposition, 1911 Catalogue and Dealer's Folder.

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I am interested and would like to know more about "Brictson" Detachable Treads. Send me your booklet, "The Enemy of Tire Expense," Proofs from Automobile Owners, Prices, etc.

Size of Tire ..... Name .....

Address ..... Dealer's Name .....

The 1912 Mercer Line

For 1912 the Mercer Automobile Company, of Trenton, N. J., is offering two models, or series, as it calls them. They are nearly identical, and the description of one sufficiently elucidates the mechanical details of the other.

Motor.

The motor is of the four-cycle four cylinder type, with the cylinders cast in pairs. The water jackets are cast integral with the cylinders. The crank shaft, which has three bearings, is 2 in. in diameter, and has a total bearing length of 10 in. All valves are 2¼ in. in diameter and are interchangeable. The cams are made integral with the shafts, the latter being 1¼ in. in diameter. The bore is 4½ in., stroke 5 in., developing 32.7 h. p., according to the S. A. E. rating (same as A. L. A. M. rating) the speed being 1700 r. p. m.

The connecting rods have a distance of 12⅛ in. between centers, which distance is in excess of the length ordinarily used for this stroke. The decreased angle between the connecting rod and the cylinder wall cuts down the piston friction. A patented machine piened piston ring, which fits tightly without excessive pressure, also cuts down friction.

A rocker arm is interposed between the cam shaft and the push rod, eliminating side thrust on the push rod and guides.

All bearings are of Parsons' white brass, knurled into Government bronze cages.

The timing gears are of bronze and steel, spur type, with 1¼ in. faces.

Cooling and Lubrication.

The water is cooled by means of a cellular radiator, the water being circulated by a gear-driven centrifugal pump. The fan is attached to the motor and is mounted on annular ball bearings, being adjustable to take up for the stretch of the fan belt.

The lubricant is distributed through a constant level splash system, maintained by a force-feed rotary pump, the oil passing through a sight feed on the dash. The capacity of the oil reservoir is 1½ gal.

FIG. 1. Mercer 1912 Models 35-A and 35-B, which have a body of the Newport type made of sheet metal. The upholstering is of hand-buffed leather, and cushions are supported on deep coil springs. The price is $2,750.

Ignition and Carburetion.

The ignition is supplied by a Bosch magneto of the double distributor dual type. This system fires two plugs, one over the exhaust and one over the inlet valve, simultaneously. Batteries are used for starting.

The carburetor is of the float-feed type with a fixed nozzle. It is easily adjusted and very accessible. The gasoline tank is located at the rear, holds 18 gal. and pressure is maintained by a Lunkenheimer pressure regulator.

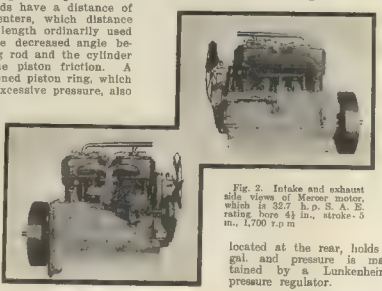


FIG. 2. Intake and exhaust side views of Mercer motor, which is 32.7 h. p. S. A. E. rating, bore 4½ in., stroke 5 in., 1,700 r. p. m.

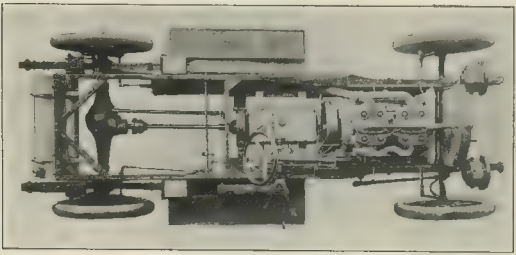


Fig. 3. Side elevation of Mercer chassis, disclosing the position of steering gear, foot levers, control levers and upsweep of frame over rear axle.

Transmission and Clutch.

The Mercer transmission is of the selective type, providing four speeds forward and one reverse. Direct drive is on third speed. The shafts of the gear set are mounted in annular ball bearings.

The clutch, of the multiple disc variety, has forty-four plates and is incorporated within the gear case, and runs in oil.

Drive.

The drive is through a shaft fitted with two Spicer universal joints. The torsion rod is constructed of nickel steel, the driving and braking strains being taken by two radius rods and not through the springs.

Axles, Wheels and Brakes.

The front axle is a one-piece nickel steel forging. It is a low drop I-beam section member proportioned to give the greatest safety, and is heat treated.

The rear axle is of the full floating type, having a 1¼ in. chrome-nickel steel driving shaft enclosed in a pressed steel housing and mounted on annular ball bearings. The whole differential gear unit is easily removable without disturbing the rest of the car.

The wheels are of the usual artillery type, with wooden spokes and are circled by 34 x 4 in. tires, front and rear. The wheel base is 118 in. and the tread 56 in.

The brakes are of the expanding variety on both rear wheels, acting on 16 in. pressed steel drums, lined with Johns-Manville brake lining 2¼ in. wide. The service brake on the rear of transmission case is of the contracting shoe type, lined with the same material.

Frame and Spring Suspension.

The frame is of pressed steel, channel section, heat treated. It is offset in front to allow short turning and has 3½ in. kick-up over the rear axle, giving a straight line drive and bringing the center of gravity close to the ground, but at the same time giving ample clearance.

The springs are semi-elliptic in front and three-quarter elliptic in rear, 2¼ in. wide and constructed of vanadium steel.

The mud guards are of steel with mud aprons attached. No rivets are used.

Steering Gear and Control.

The steering gear is of the worm and sector type, carefully heat treated. Hardened bearings and ball thrusts are provided.

Fig. 4. Top view of Mercer chassis, showing the four-cylinder T-head motor, location of gasoline tank at rear and large size exhaust line.

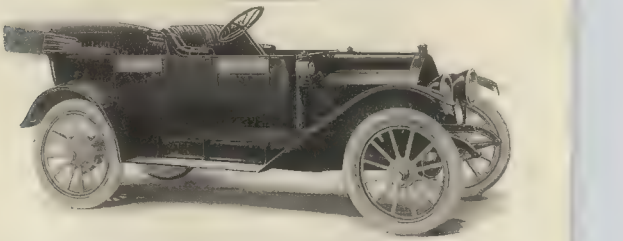
Fig. 5. The Mercer crank shaft with connecting rods attached. Note the oil scoops on each crank pin which collect the overflow oil from the main bearings and distribute it to the crank pins.

The spark and throttle levers are located on the top of a 17 in. steering wheel, and do not revolve with it. The clutch is operated by a left foot pedal, while the right pedal operates the service brake. The accelerator pedal is placed between the two. A hand lever on the outside operates the two emergency brakes through equalizers.

Equipment.

The equipment consists of one pair of Rushmore search lights and Prest-O-Lite tank, one pair of square oil side lamps, one tail light, one horn and set of tools, tire pump, jack, repair kit, and special wrenches. Best quality Mohair or Pantasote top, windshield, demountable rims including extra rim, side tire irons and Truffault-Hartford shock absorbers.

The price of the Mercer car is $2,750, f. o. b. Trenton, N. J.



Great Western Detachable Fore-door Model.

This cut illustrates the new body which the Great Western Automobile Company, of Peru, Ind., is building on its chassis. The fore-doors are so designed that they can be quickly and easily detached, leaving a finished open touring car. The body mouldings and dash are in black walnut. Even such little details as hand grips for the occupants of the tonneau and compartment between the front seats for handy reference books and memoranda go to show the degree of excellence to which this body has been carried. The door hinges are concealed so that there are no objectionable projections on the outside of the body proper, and the door locks are controlled by inside handles. The control levers are located on the inside at the right of the driver, and are brass-plated throughout. The steering wheel is 17-in. laminated walnut with a dished aluminum spider. The price of the new car is $1,760.

INSTITUTE OF INDUSTRIAL RESEARCH GETS ROADS DIVISION

The Bureau of Industrial Research, of Washington, D. C., has organized and equipped a Division of Roads and Pavements under the supervision of Prevost Hubbard, whose services have recently been secured as chief of this Division of the Institute.

Mr. Hubbard is well known through his connection during the past seven years with the U. S. Department of Agriculture in which he served first as assistant chemist and later as chief chemist of the Office of Public Roads.

The Division has been assigned adequate quarters in the Institute's new building, which has just been completed, and will consist of two well-equipped laboratories—one for physical work in connection with cements, mortars, concrete, block, brick, etc., and the other for chemical analysis and investigations of all types of bituminous and other road and paving materials. The equipment consists of the latest approved apparatus, and special apparatus will be added as occasion demands.

"Brazil is just getting the automobile fever," says Arthur Pires Teixeria, Cole agent at Para, Brazil, and "The American car is going to get its share of the business. The American car is proving its value from every standpoint and looming far in advance as a good buy over its European competitor." Mr. Teixeira, who was in the crude rubber business before entering the automobile industry, recently visited this country to study automobile conditions.

Haynes 1912 Models

A most complete line is presented for the season of 1912 by the Haynes Automobile Company, of Kokomo, Ind., including two chasses, 40 and 60 h. p., Model 21 and Model "Y," and eight body types

Model 21 is not greatly unlike its 1911 predecessor, Model 20, but is much larger in every way, a long rakish car with 120 in. wheel base, the radiators dropped 3 in. on the sub-frame and body hung low. All 21 models are equipped with 36 in. wheels and remountable rims.

Fig. 1. Haynes Model 21 Limousine, showing general exterior design. Note extension of frame into horns to meet front ends of front springs.

In both the tonneau and driver's compartment the utmost comfort has been supplied in Model 21. The front seat is well back, allowing ample leg room, and the steering wheel is very large and set at an angle that allows the driver a comfortable position which does not tire when driving long distances. The tonneau is very roomy, the seat being wide and deep, and set low. It is upholstered in hand buffed leather with spiral springs underneath and tufted with the best curled hair. Long three-quarter elliptic springs in the rear and semi-elliptic in front assure the maximum in easy riding qualities.

Motor.

The Haynes motor is of T-head type, cylinders cast in pairs, bore 4½ in., stroke 5½ in., full 40 h. p., valves very large (2¼ in. with 5-16 in. lift) providing ample space for the gas to pass in and out without friction. The large valves also increase motor efficiency and practically eliminate warping. The cylinders are water jacketed their entire circumference, the water circulating between cylinders as well as around the outside. This insures constant cooling under all conditions.

The greatest attention has been given to the reducing of vibration and noise in this motor without decreasing the power. It is possible, with any motor, to attain quiet running qualities by adjusting valve push rods so closely that the valves do not close entirely, but this causes very considerable loss of power. In the Haynes motor the cams are so designed and ground to a fraction of an inch and the push rods fit so perfectly that at all times the push rods lie so closely to the cams that the opening of the valves cannot possibly cause noise. To further eliminate noise, all push rods and valve springs are entirely housed, each one in a separate compartment. The timing gears are encased on the outside of the crank case in a separate compartment, in order that a heavier oil or

Fig. 2. Haynes Model 21 Five Passenger Touring Car. Note size and shape of mud guards and absence of outside handles to doors

grease may be used, and this, too, eliminates noise to the fullest degree. In order to further do away with the possiblity of noise from the motor, all Haynes timing gears are cut in the Haynes factory on their own machines, which assures absolute uniformity of the teeth, and thereby assures true fitting. All gears are ground to a high polish before building on the motor. In this manner the quiet running motor is made possible, without sacrifice of power. Long white bronze bearings are used throughout. Both crankshaft and cam shafts are three-quarter nickel steel. Vibration is eliminated in the balancing of the motor.

The push rods are of the mushroom type. Valve springs and push rods are entirely enclosed in individual compartments. A

plate which is fitted in the most convenient place on each compartment enables adjustment without trouble. Pistons are equipped with four rings, each ¼ in. apart and ⅜ in. in width, taking up in all 1½ in. of the piston heads and assuring perfect compression.

The motor is suspended at four points. The two rear points are pivoted to the frame

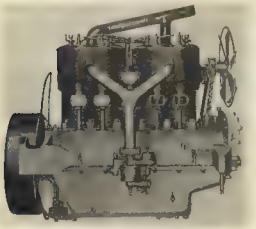


Fig. 3. Inlet valve side of Haynes Model 21 motor. All parts such as pump, magneto, stand, etc., are formed integral with the base. The bore is 4⅛ in. and the stroke 5½ in., developing 40 h. p.

and the two forward points are set upon spiral springs on the seats suspended from the frame. The four point suspension, holding the motor rigidly in the frame, eliminates vibration to a great extent. This also is a flexible suspension. The twist in the frame when rolling over rough places is taken up in the springs under the front points of suspension, and all strain is removed from the motor. The cooling system is by means of forced circulation, driven by a centrifugal pump, and a Fedders cellular type radiator. Carburetor is of the Stromberg type, 1⅜ in.

Lubrication.

Lubrication is by the force feed and splash system. The crank case is halved in two compartments, one directly underneath the other, the lower part of the case being used as a reservoir, the upper half carrying the oil in little pools directly in the path of the connecting rods. The oil is pumped by an automatic pump, from the lower half of the crank case, to the upper, and is held at a certain level automatically. This automatic action is caused merely by the oil overflowing when it reaches a certain height. That which overflows drains back into the reservoir case. The little pools in the path of the connecting rod are always at a certain height and as every connecting rod comes around on its respective revolution, tubular blades, which are affixed to the lowest point on the connecting rod dip up the oil and splash it into the walls of the cylinders and into all bearing grooves.

In using this lubrication system all that is necessary is to fill the crank case full of oil and forget it until the sight feed on the dash indicates the oil is all used.

Transmission.

The transmission is of the selective type, with three speeds forward and one reverse, and is suspended from the base of the motor by two large aluminum arms, making a unit of the power plant. Suspending the transmission from the base of the motor allows the transmission to remain entirely independent of the frame, which assures continual perfect lineage of the main shaft.

Clutch.

The Haynes clutch is free from the faults that go to make some clutches undesirable. It is capable of any performance of other clutches and prevents many troubles common with other clutches.

The principle of the Haynes clutch is very simple. It consists of a contracting steel band encircling a bronze drum, the latter bolted to the fly wheel of the motor, while the steel band, which is keyed to the transmission shaft, drives the transmission gears.

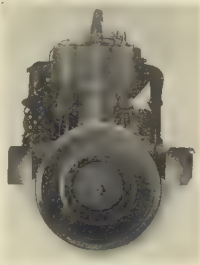


Fig. 4. End view of motor showing flywheel and clutch surface and supporting arms which fasten to subframe.

When engaged the band is contracted around the clutch drum in the vise-like grip, and when the motor is running free the band is expanded its entire circumference, allowing the clutch drum to run perfectly free. The springiness of the steel band alone is not relied upon to engage with sufficient force to transmit the power, but the band is forced to contract and expand by

means of a wedge-shaped shipperhead tapered only on one side. This throws a lever one way to engage and the other way to disengage and is positive in its action.

Adjustment, when necessary, is so easy that a minute's time is all that is required. It is only the adjusting of one set screw, which can be tightened or loosened at will. Being all metal, the life of the Haynes clutch is as great as that of the car.

Fig. 5. Rear clutch assembly showing clutch band and operating mechanism.

Axles and Brakes.

The rear axle is of the Timken full floating type, fitted with Timken roller bearings throughout. In this type of axle the entire weight of the car is carried on the housing, allowing the live axle which propels the car to run entirely free, which does away almost entirely with the wobbly rear wheel. The propeller shaft is of nickel steel, square at each end, and fitted into universal joints, which are entirely metal housed, doing away with the leather boot. This type of universal joint eliminates oil leakage, and assures constant lubrication to the working parts of universal joint proper, adding long life and minimizing trouble on this score.

The front axle is 2 in. drop forged, I-beam section, and is equipped with Timken roller bearings.

The brakes are contracting and expanding, Raybestos lined. Diameter is 14 in. x 2½ in. wide, giving a braking surface of 1 sq. in. to every 13 lbs. of car. All brakes are equipped with a heavy spiral spring which connects the external band, keeping same always adjusted and eliminating rattle altogether.

Other Details.

The steering gear is of the worm and gear type and is of Haynes design.

The standardized Model "Y" remains the same for 1912 with exception of details which go to beautify. The wheel base is 125 in. The rear wheels are equipped with 37 x 5 in. tires and demountable rims are included in regular equipment.

The rear springs are three-quarter elliptic type, 41 in. long, 2 in. wide with six leaves, are made of a special compound of steel, very tough and giving the greatest amount of resiliency. Spring seats are collared around rear axle, and are adjusted so they are entirely independent of same.

Body Designs.

Body designs for the 21, 40 h. p. chassis are: five passenger touring, four passenger close coupled, Colonial type coupe, and limousine.

For the Model "Y" the seven passenger touring, four passenger close coupled, two types of limousine bodies, the open front and the vestibule front.

The open front limousine is equipped with half doors, while the vestibule front has full fore doors.

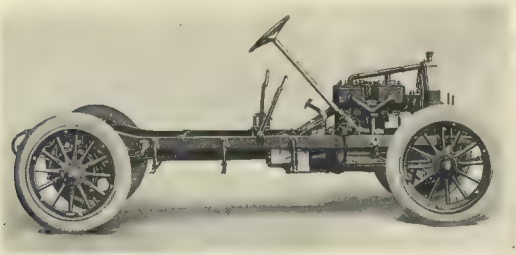


Fig 6. Right side view of Haynes Model 21 chassis. The engine cylinders are cast in pairs and are water cooled. The transmission is of the selective type, giving three speeds forward and reverse.

Equipment.

The top is of silk mohair, lined with a tan cloth; the bows are of ash, enameled and highly polished. An extension such as is shown in the illustration allows the top, when down, to parallel the body lines, adding grace of line, and also doing away entirely with the short front bow, which is essential on all other types. The head lamps are 11½ in. face, of Gray & Davis make; side lamps are very massive and are of the bail type, and tail lamp is also of Gray & Davis make. All are black enameled and nickeled. The glass front is automatic folding, of very heavy glass rim nickeled, Prest-O-Lite tank, Model "B" size. Warner sixty-mile dial speedometer, also nickel. Pump, jack, extra demountable rim, complete set of tools and repair outfit included in equipment.

DuPont's Camping Car to Help Build Delaware Roads

Col. T. Coleman duPont, United States Senator from Delaware, who recently created a sensation in the motoring world with the announcement of his determination to build a public highway running due north and south through his entire home State, is going ahead with his project with marvelous decision of detail.

DuPont's camping car, in which he will oversee the construction of his boulevard.

Col. duPont's purpose is to keep in personal touch with the one million five hundred thousand dollar project and to this end has had a camping car built under his own plans, which is possibly the most unique type of motor car construction in existence.

The car has a body specially constructed and so laid out that it has sufficient length inside to accommodate a hair mattress six feet long. There are two lockers about 6 in. wide which run the complete length of the body on each side, affording packing space for supplies. The top is permanent, with a slat rack on the under side holding four vulcanized fibre provision boxes which are strapped into place over the rack. There is also a rack in the top for taking care of drawings, plans, etc., and arranged on the top of the body above this is a slat rack with an iron railing of sufficient size to carry four extra tires, which are tightly strapped to the rack.

As to the locker space, there are eight regular boxes on the car for storage purposes. On the inside of the car in the rear, there is one which is used for the purpose of carrying cooking materials, such as a stove, etc., and there is one on the rear just ahead of the cooking utensil box where the storage battery and dry cells are carried. There are two long ones on each running board which will be used for the purpose of carrying the tent material, and two iron boxes on top of tent boxes filled with tools. There are also provided on the running boards two especially constructed oil reservoirs for surplus oil.

The tent is one of the most unique features of the entire layout and is made of balloon, waterproof silk of very light material for packing in a small space. There are six tent poles, each six feet high. When the tent is not in use these poles are carried on a board alongside of the car. The tent is so constructed that there are division curtains hanging from the side of the car to the ground, making practically three compartments, two outside of the car body and one car compartment inside.

1912 G. J. G. "Junior" Model

The G. J. G. Motor Car Company, of White Plains, N. Y., announces for 1912 a "Junior" model, priced at $1250. The body is a fore door touring type. The motor has a horsepower of 26, the four cylinders, 3¾ x 4½ in., being cast in pairs. The valves are all on one side, operated from a single cam shaft within the crank case. The valve stems and springs are housed by an aluminum cover plate. The carburetor is a Schebler and ignition is high tension, current furnished by a Bosch magneto. Lubrication is by a self-contained splash system and pump. The motor is water cooled, having a centrifugal gear-driven pump. The motor is three point suspended and is united with the clutch and gear set.

The clutch is of multiple disc type and can be demounted without disturbing motor or gear set. The gear set is selective sliding, with centre control and provides three speeds forward and reverse. The drive is through a propeller shaft, enclosed in a tube, and having one fully enclosed universal joint.

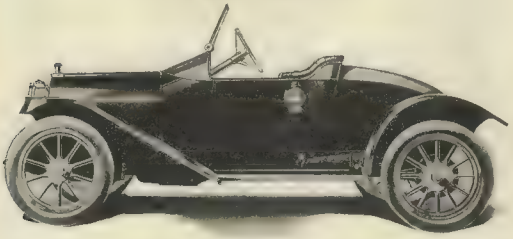
The front springs are semi-elliptic and rear full elliptic with scroll ends. The front axle is an I-beam drop forging with integral spring seats. The rear axle is of the semi-floating type with a pressed steel housing fitted with a hard plate. The frame is pressed steel, channel section.

The steering gear is the worm style with adjustment for wear and is provided with an 18 in. hand wheel. Two sets of brakes are provided, operating on rear wheel drums which are 10¾ in. in diameter. The wheel fenders are flanged and fitted with aprons, apron pieces between frame and running boards, and sod pan to protect mechanism.

The equipment consists of Dorian quick detachable, remountable rims, gas head lamps, Prest-O-Lite gas tank, oil side and tail lamps, horn, tire repair kit, pumps, jack and roll of tools.

The standard color is deep blue with black striping, gold hair lines and black leather upholstering.

1912 King "Silent 36"



1912 King Silent "36" Touring Runabout which sells for $1565 with complete equipment. The wheel base is 115 in. and the tread 56 in. The 36 h. p. motor has a bore of 2 13-16 in. and a stroke of 5½ in., giving a piston displacement for the four cylinders of 234 cu. in.

The King Motor Car Company, of Detroit, Mich., is offering for the season of 1912 a "Silent 36." The touring runabout shown herewith, sells for $1565, completely equipped. The motor has four cylinders, 3 13-16 x 5½ in. developing 36 h. p. A high tension system of ignition is used, current supplied by a Bosch magneto driven by spiral gears. The motor is three point suspended. Lubrication is by the King system, and a honeycomb radiator and thermo syphon system are used in the cooling plant. The clutch is of the multiple disc type. The transmission gear set is of the selective type allowing three ratios of speed forward and one reverse. The transmission case is en bloc with the motor. Two sets of brakes are provided, internal and external, operating on the rear wheel drums and operated by two foot pedals. The front springs are semi-elliptic and the rear of special construction. The front axle is pressed steel channel type and the rear axle is full floating. The tires are 34 x 4 in. front and rear. Other models are a limousine and roadster coupe.

This 1912 Self-Starting Marion "35"—$1285

Five passenger, fore-door touring car thirty horse-power equipped with self-starter wheel-base 112 inches tires, 32x4 No rim-cut type; two gas lamps three oil lamps all-black enameled with brass trunts magneto, horn tool-kit, oiler, quick tire repair kit and pump. Top extra. Price, $1285

THERE are any number of ways to "trim" the value of an automobile. And it can be done so skillfully that the average buyer does not know the difference. This "cheapening process" seldom touches those parts of the car which most people are more or less familiar with. The wheel base, horse-power, seating capacity, number of lamps, etc., are not generally tampered with. These surface facts are too much in evidence. But, strange to say, the most vital parts of the machine are cut to the bone.

To illustrate: You can take a $10,000 home and easily cut a thousand dollars from its cost by putting on a cheap roofing material, substituting soft woods for hard woods on the interior finish, selecting inferior hardware, etc.—in short, weaken the whole structure. In general appearance you would still have the same house. It would still be the same size—have the same number of rooms—same size rooms, etc., but the difference would quickly show in rapid and costly deterioration.

It is the same with an automobile. You can weaken the brakes—put on a frail rear system—use iron instead of aluminum in the housings—use small wheels and tires—cheapen the upholstery, and easily cut the cost of the whole car twenty-five per cent. And you cannot get away from the fact that when you cheapen you must weaken.

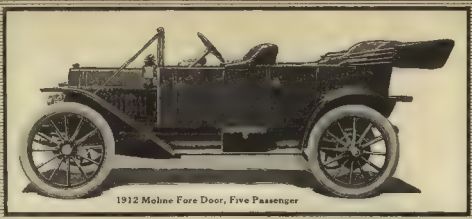
Against this condition the Marion "35" at $1285 is a striking contrast. First of all the equipment includes the most improved self-starter. No more back-breaking cranking. Just pull a little lever on the dash, throw the switch on the battery, and you're off.

The Marion rear system has never been equaled in a car of this price. There are five double annular bearings in the transmission; two Timken roller bearings in the differential; two roller bearings in the axle and one in the drive shaft. You cannot find a car below $1800 that has this expensive line-up of rear system bearings. This construction makes its operation practically frictionless. The brake construction is the twin internal expanding type, operating within drums which measure four inches in width and fourteen inches in diameter—the same brake as you find on the highest priced cars. Compare this rear system and brakes with the rear system on cars of the $1000 class, and you'll see where the "cheapening process" comes in. The Marion motor is the four-cylinder—four cycle type—rated at 30-horsepower. It will easily develop fifty miles an hour and has a record for economy. Aluminum housing instead of iron lowers the weight of this car 82 pounds and greatly lengthens the life of its tires, and, of course, aluminum costs more than iron. And the wheel base is a full one hundred and twelve inches.

Run this Marion alongside of any car listed at about the same price. Look the two over. See how much bigger, better and stronger the Marion looks. See how much heavier the construction is. See if it does not seem more practical to invest $1285 than $1000. The additional price guarantees you additional strength and security.

See this car at once. Our 1912 book will give you all the facts. Write for a copy to-day.

The Marion Sales Company, Indianapolis, Indiana



1912 Moline Fore Door, Five Passenger

Moline

1912 Announcement

For 1912 four models of the "Dreadnought" Moline—
"Undisputed King of the Road"—are presented.

Five Passenger, Fore Door, . $1,700
Four Passenger, Fore Door, . $1,700
Above Prices Include Zig-Zag Glass Front

Four Passenger Toy Tonneau, $1,600
Two Passenger Roadster, with complete equipment included . $1,700

All built on same chassis and equipped with the famous 4 x 6 Moline 35 h. p.

Long Stroke Motor

—the motor sensation of 1911.

—the motor with the longest stroke of any American made car based on bore.

—the motor which defeated all contestants in all the Official Endurance, Reliability and Fuel Contests of 1911.

—the motor which made the best road and technical record of any car entered in the last and hardest Glidden Tour ever run, regardless of classification, size, power or price, winning the Chicago Trophy.

—the motor which won the Touring Trophy in the 1911 Annual Fuel Economy Contests, making the remarkable record of 19.3 miles per gallon of gasoline, carrying a load of 3,600 pounds.

Naturally there are no radical mechanical changes in the 1912 Moline—BUT—There are many new additions in equipment and refinement which make the 1912 Moline unquestionably the greatest value on the market, even at a third more than its price.

These comprise larger tires—longer wheel base, nickel and black enamel trimmings Prestolite gas tank, brass bound, linoleum covered foot and running boards, handsomer, roomier bodies; finer finish completing a car *equal* to any in style and appearance, *unequaled* by any in road and reliability contests — the real test of an automobile

May we send you our 1912 literature, fully describing these four invincible 1912 models.

MOLINE AUTOMOBILE CO., 37 Keokuk St. East Moline, Ill.

LIGHT YOUR FORD HEADLIGHTS BY ELECTRICITY

The K W Outfits manufactured for this purpose are not makeshifts, but are complete in every detail, designed and engineered to work in connection with the ignition, both deriving their supply of electric current from the Ford Magneto.

The Outfit complete, which is all you need, consists of :

1 pair complete 8" Head Lamps with Parabolic Reflectors with 1½" focus.
2 Tungsten Bulbs. Size of Bulb, 2¼" diameter.
12 feet Wire.
1 Diamond Switch. Instruction Sheet for Wiring.

The best results in electric lighting cannot be obtained by the use of reflectors put in gas lamps. The highly burnished silvered surface must be protected in a dust-proof lamp

THE REFLECTORS have a 1½" focus which throws a strong beam ahead as well as lighting both sides of the road brightly.

THE LAMPS are made entirely of one piece of brass drawn from steel dies, have no soldered joints, easy to polish, and are 8" over all, making a handsome lamp for the Ford cars. They fit the forks furnished on the Ford cars.

THE LIGHT which this outfit gives is vastly superior to either a generator or gas tank

THE BULBS have a Tungsten filament of the proper voltage and amperage which will not interfere with the ignition and have the Edi-Swan or Bayonet base, impossible to fall out and secure the silver reflector like the screw base

THE PRICE for complete outfit is $15.00

WE PAY THE EXPRESS charges East of the Mississippi, and to the Mississippi on points beyond when cash accompanies the order

TRADE **K-W** MARK

MASTER VIBRATOR

For all cars using vibrating spark coils and ESPECIALLY FOR

FORD CARS

You will never know how much speed, power and flexibility there is in your car until you try a K W Master Vibrator.

It takes the place of the separate vibrators on your coil, giving you one fast vibrator and powerful condenser for all of them, thus giving absolute synchronism, with a smoother-running engine and **MORE POWER.**

Try it 30 days: if for any reason you don't want it, return it and get your money back.

PRICE, $15.00

We also make High-Tension Magnetos, Low-Tension Magnetos, and Vibrating Spark Coils—a complete line of ignition apparatus. Tell us your wants when writing for catalogue.

FACTORY AND MAIN OFFICE

TRADE **K-W** MARK **IGNITION Co**

40 Power Ave. CLEVELAND, OHIO. U.S.A.

There are no more completely equipped nor further advanced cars made than the

1912 PULLMANS

PULLMAN cars are sold to the purchaser ready for the road. He is not forced to spend several hundred dollars additional for top, windshield, speedometer and other equipment.

Embodying as they do the best features in American and foreign automobile construction together with the many detail improvements made by our own engineers, our new models are unquestionably the leaders for 1912.

4-40—Fully Equipped - - $2150.00

(Including Electric Lighting and Self-Starter)

For eight years PULLMAN cars have had a reputation for reliability, comfort and beauty of finish and have thoroughly established the fact that they can be run at a low consumption of gasoline and oil and are easy on tires. In design, quality of materials and workmanship, in the every detail which makes for perfection in automobile construction, the PULLMAN has no superior.

The PULLMAN Company offers for 1912 the

PULLMAN 4-30, $1675 4½x5 motor, 118-inch wheel base, five-passenger vestibuled body, equipped with top, top boot, windshield, speedometer, gas headlights, gas tank, oil side lamps, oil tail lamp, tool box, robe and coat rail, foot rail, pump, jack, horn and repair kit.

PULLMAN 4-35, $1750—4½x4¾ motor, five-passenger vestibuled touring car body, equipped as 4-30.

PULLMAN 4-40, $2150—Self-cranking 4½x5½ motor, complete electric lighting system, four-speed transmission, 122-inch wheel base, 36x4 tires, demountable rims, five-passenger vestibuled touring car body, top, top boot, windshield, speedometer, tool box, robe and coat rail, foot rail, pump, jack, horn and repair kit.

PULLMAN 4-50, $2700 Self-cranking 5¼x6 motor, complete electric lighting system, four-speed transmission, 127-inch wheel base, 36x4½ tires, demountable rims, seven-passenger vestibuled touring car body, with top, top boot, windshield, speedometer, tool box, robe and coat rail, foot rail, pump, jack, horn and repair kit.

PULLMAN 6-60, $2750 -Self-cranking 4¼x5½ motor, complete electric lighting system, four-speed transmission, 138-inch wheel base, 36x4½ tires, demountable rims, seven-passenger vestibuled touring car body, with top, top boot, windshield, speedometer, electric vulcanizer, tool box, robe and coat rail, foot rail, pump, jack, horn and repair kit.

Write for announcement No. 2 and convince yourself of the superiority of the PULLMAN by comparing the several models with cars of greater price.

Pullman Motor Car Co., 165 North St., York, Pa.

The Touraine Six

Motor—3¾ x 5¼, Renault type, all working parts enclosed Wheel base, 124".

Pioneers in the manufacturing of six-cylinder cars, moderately priced. In the "Touraine" Six we believe we are the first makers to offer a popular priced six-cylinder car whose appearance and quality will not suffer by a ***careful comparison*** with the ***highest priced six-cylinder cars made.*** Overhead and sales expense have been minimized in order to permit the use of the best rear axle available, the introduction of an expensive motor design, using high alloy steels selected with reference to their best individual ability in the various parts of motor and transmission, and a refinement of exterior details, of body appointments and accessory equipment, which does not appear in ***either four or six-cylinder cars similarly priced.***

The standard equipment includes:—

Compressed Air Starter and Tire Inflator—The air compressor is substantially constructed, pistons fitted with ground rings and quiet in operation. The distributor operates without friction, the complete starting system being simple, positive in action and requiring no adjustments.

Lighting—Gray & Davis electric and combination side and tail. 10¾" headlights.

Speedometer—New type Stewart & Clark, 60 miles with Tripodmeter.

Mohair Cape Top.

Glass Front—Rain vision, full plate, not the ordinary stock shield, the very highest quality in all details.

Demountable Q. D. Rims (Firestone)—Wheels, 36 x 4.

Tire Irons—Double, drop-forged, bolted to side frame members.

Weight—2800 lbs., with complete equipment.

Bodies—Two, four and five passenger fore-doors, 10" upholstery of finest hand-buffed leather. We ask comparison of "Touraine" body appointments and finish of all exterior details with the most expensive cars made. The performance and appearance of the powerful, silent, luxuriously equipped "Touraine" Six will instantly appeal to motorists as representing ***a true quality car creating a new value standard.***

Price, complete, $2250

DISTRIBUTORS IN THE PRINCIPAL CITIES

MANUFACTURED BY

NANCE MOTOR CAR COMPANY

12th and Vine Sts., Philadelphia, Pa.

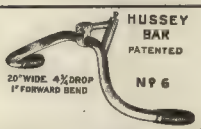
1912 Thor $175.00

THE COMMERCIAL MOTORCYCLE WITH FREE ENGINE CLUTCH

The Extreme Endurance qualities of Thor Motorcycles have proven them best adapted for daily hard consistent service

Write today for our advance circular showing 1912 Commercial Type Model

AURORA AUTOMATIC MACHINERY CO., Commercial Dept., Thor Bldg., CHICAGO



Furnished on All Good Bicycles They Help You Sell

Specify Them

Consolidated Manufacturing Company 1710 Fernwood Ave. 1917-29, 6000

F. C. CORNISH, Eastern Representative
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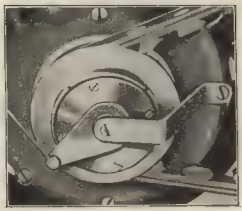
CURTISS MOTORS

are used exclusively on Marvel Motorcycles, making them the best touring machine possible to buy. Send for description of the 1912 model. Immediate shipment, *a few more desirable agencies still be placed.*

MARVEL MOTORCYCLE CO.
Hammondsport, New York

1912 ECLIPSE FREE ENGINE PULLEY

For any 1911-12 Machines



Neat, compact, easy of access. 3 main parts, and removal of 6 screws in the face shows heart of pulley. Large notch adjusting collar permits necessary adjustments. Oiling arrangement very simple.

PRICE—with handle bar control—$15.
" —with side lever control—$16.

MAY WE FIGURE WITH YOU?

ECLIPSE MACHINE COMPANY
ELMIRA :: :: NEW YORK

HAVE YOU

a motorcycle for sale? Do you want to buy a second-hand motorcycle?

Use the Classified Columns of this Journal :: :: ::

Small cost, large returns. Try and you'll be convinced.

Minneapolis

BIG 5 Auto-Cycle-1912

An Automobile on two wheels

Two-Speed Transmission, Multiple Disc Clutch, Unit Power Plant. Agents Wanted. Send for Catalog. Address:

MINNEAPOLIS MOTORCYCLE CO., 517 So 7th Street, Minneapolis, Minn.

1911 Proposition on Bicycles and Bicycle Tires

Now Ready

Write for Prices

SIDNEY B. ROBY CO., Rochester, N. Y.

"AC STAR" Spark Plugs

"Actions Speak Louder Than Words"

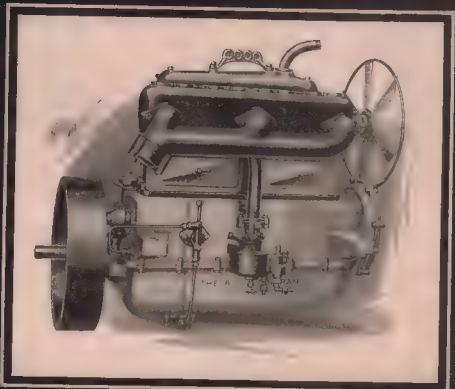
This is the reason why the majority of automobile manufacturers are specifying "AC STAR" as standard equipment for their 1912 product. They have watched with interest the performance of the "AC STAR" on such cars as the Blitzen-Benz of Bob Burman and the 200 H. P. Fiat, which machines, having engines with long stroke and high compression, are extremely severe on spark plugs. The "AC STAR" is adapted to all kinds of service and its superior three-piece porcelain construction renders it proof against breakage from heat or vibration.

Statements such as the above would be worthless if we did not know that a test of "AC STAR" spark plugs would verify them. Specify "AC STAR" on your next order and judge for yourself.

Write for illustrated booklet explaining why the "AC STAR" is superior.

Champion Ignition Co.
Flint, Michigan, U. S. A.

BUDA MOTORS



Simple—Compact—Powerful

No radical departure from accepted practice, but the leading features of American and foreign construction, developed and refined through years of experience, backed by a most modernly equipped and organized factory.

Horizontal position of bore and stroke. Long stroke motors.
Force feed lubricating system. Enclosed valves.
These are only a few of many valuable features.
Transmissions built to your specifications.
Write for detailed information.

BRANDENBURG & COMPANY

Broadway & 57th St., New York 1108 So. Michigan Ave., Chicago

Alliance's Motor Fire Apparatus

Keeping in the front rank of small municipalities that boast of motor vehicles in the public service, the City of Alliance, O., recently purchased a Sampson chemical, hose and hook and ladder truck for its fire department. The delivery of the truck, after an overload journey of 350 miles from Detroit, was the occasion of a great ovation by the population of Alliance. Chief C. F. Aungst accompanied the crew on the long run and was pleased with the showing it made, particularly because of numerous demonstrations that were made in the big towns on the route, revealing a measure of efficiency that could only be proven otherwise by many days of actual fire fighting in Alliance.

Alliance Fire Truck answering an alarm in Detroit, Mich., just before starting for its home city. Detroit's Telegraph Truck is shown leaving headquarters at the same time.

Included in the paraphernalia it carries are four extension ladders, two scaling ladders, chemical tank and reel of hose, rubber boot and coat racks, and a 10 in. search light. The rails, bells, lamps and other trimmings are in nickel finish. The truck has a four-cylinder motor of 33 h. p., and travels 35 miles an hour. Metal cases protect the driving chains and a differential locking device is used to insure traction for both rear wheels. The entire vehicle is 10 ft. high and 24 ft. long.

In making the trip from Detroit to Alliance the truck passed through Toledo, Clyde, Sandusky, Elyria, Cleveland and Massillon. In the latter city, Director of Public Safety J. F. Shepley asked for a test between motor and horse equipment. He was readily accommodated.

The start was made from Detroit late Thursday afternoon, August 31st, and the crew stopped over in Trenton, Mich. The second day's run brought the remarkable record of 108 miles for seven and one-half hours of actual time on the road. Toledo was selected as the noon rest and in the afternoon the truck reached Sandusky.

At Sandusky a delegation of public officials headed by Chief of the Fire Department Albert Hegemer, escorted the truck into the city. Before leaving, Chief Aungst of Alliance, at the request of Mayor George T. Lehrer and Director of Public Safety John C. Hauser, gave a demonstration of the fire truck that immediately started an agitation among the authorities in favor of motor apparatus for all public departments.

Enthusiasm was at a high pitch in every town and city covered in the run. On all sides public officials showed their enthusiasm and gave it as their intention to work for the installation of motors.

Chief Aungst declared that the trip was a great success and that as a result of it, agitations have been either started or renewed in a dozen cities for the immediate replacement of horses by motor.

Tests of the truck were given in every town, and chiefs of the fire departments rode through city streets and country roads to see the machine tried out under the most severe conditions. The final day saw five demonstrations. In the morning it responded to a call in Cleveland, and during the day at Akron, Canton, Massillon, ending with a test in Alliance. Other cities that saw the truck in action were Toledo, Sandusky, Lorain, Elyria.

By the end of the year the entire fire department of Alliance will have motor apparatus.

Wanamaker Using Trailers

The John Wanamaker Stores, following their progressive custom, have set the pace for the department stores by introducing their old horse vans as trailers in connection with their three-ton trucks.

The sudden enormous demands upon the delivery department, due to the holiday trade, is the necessity which is mother of the present invention. Large quantities of goods have to be hauled in the shortest possible time from the store to the various transfer stations situated at the outskirts of the city and in the suburbs. The present facilities proving inadequate, the large horse vans, which have a capacity of almost three tons, have been slightly altered in regard to the pole, which was shortened and braced underneath and at each side, so that the vans can be connected with an ordinary coupling pin to the rear of the three-ton trucks. Auxiliary chains are used from the rear axle to the van in case of any accident to the pole. The vans trail the trucks and do not require steering or braking, as the brakes on the motor truck are sufficiently powerful to take care of both vehicles. In this way the three-ton trucks are handling over five-ton loads and doing it with ease, and without unnecessary strain on the mechanism.

The combination has worked out already so successfully that the vans will be used in connection with the trucks for regular work, even after the holiday season's rush has passed.

Wanamaker truck and trailer, the latter being one of the old horse vans. This combination was put on to care for the Xmas rush, the outfit handling over 6 tons without extra men.

AUTO TRUCK AGENTS ORGANIZE

One of the best evidences of the importance of the commercial car end of the Philadelphia Auto show is the formation of the truck division of the Automobile Trade Association. The new organization is composed of twenty-three commercial car dealers in Philadelphia, and H. M. Coll, sales manager of the Autocar Company, has been elected chairman.

A NEW YORK DELIVERY SYSTEM

The great New York dry goods house of Stern Brothers has one of the most complete delivery systems in the United States, and in order to accommodate their rapidly expanding delivery radius they have been giving the greatest consideration to motor delivery. For some time past the problem of cheap and prompt delivery has been a vital one to all the large New York stores whose business covers the entire metropolitan district for a radius from twenty to thirty miles. To facilitate matters they have long been going to the expense of keeping relays of horses and men in several of the large surrounding towns, making large shipments to these places by over night freight to be delivered by their own wagons the next morning.

The commercial car is rapidly displacing these relays and the Chase Motor Truck Company, of Syracuse, N. Y., has recently been filling large orders for Stern Brothers for 1500 lb. delivery wagons. These wagons, following out the distinctive style of Stern Brothers wagon decoration, will have a rich coach blue body with a center panel of Tuscan red and yellow running gears

The Commercial Car Sales & Service Company is the name under which the Autocar Sales Company, of New York City, will operate its Chicago branch. K. B. Harwood, general manager of the Autocar Sales Company will have charge of the company's interests in Chicago and vicinity.

The Schildwachter Carriage Company, New York City, has taken over the exclusive eastern agency for Sternberg trucks, manufactured by the Sternberg Manufacturing Company, Milwaukee, Wis. This company makes a specialty of two, three, four and five-ton trucks. The Schildwachter Company will also handle McIntyre Power Wagons.

The single gasoline fire engine of the St. Louis fire department has proved so economical and efficient that another will be ordered in the near future.

ANDROCK FLUESTOP

Two "Androck" Specialties That Are Winners

ANDROCK CARPET BEATER

Get our latest Catalog and investigate the full line of "High Grade" Wire Goods and Sheet Metal Specialties we make. It will pay you.

Andrews Wire & Iron Works
Rockford, Ill.

Manufacturers

Andrews Wire Works of Canada, Ltd.
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"THE ROAD TO SUCCESS"

Order only the Best goods. "We guarantee every tool we make." Each month we will illustrate one of the sign posts on the road.

FIRST MILE ON THE "LINE"

The Best Can Opener
Fastest seller on the market. Get the Best.

We AIM to Make Quick Selling Specialties.
We AIM to Make Satisfied Customers.
It is all in the Quality and Finish of

"The Browne Line from Kingston."

Send for Catalog

We Hit the Bulls Eye

THE W. G. BROWNE MFG. CO., KINGSTON, N. Y.

THE *American* LEADS THE WORLD

AND THIS IS IT

A Necessity to All Hardware Dealers

PREVENTS	SAVES
Forgotten Charges.	Bookkeeping Labor.
Mistakes in Footings.	Expense of Statements and Postage.
Incorrect Charges.	Expense for Clerk Hire.
Disputed Accounts.	Loss from Slow Collections.
Improper Credits.	Loss from Over Credits.
Dissatisfied Customers.	Concessions to Customers.

OUR AUDITING INDICATOR is the only known practical device to verify sales. You retain the ORIGINAL itemized sales slip—your customer holds an EXACT DUPLICATE.

ALL THIS WORK IS DONE BY A SINGLE WRITING

OUR SYSTEM IS ADAPTED TO STORES LARGE OR SMALL

REMEMBER! THAT YOU PAY FOR IT WHETHER YOU BUY IT OR NOT

BUT IT REPAYS YOU MANY FOLD IF YOU DO BUY IT

We have hundreds of letters from hardware merchants praising the AMERICAN ACCOUNT REGISTER AND SYSTEM. One of them writes:—"It does all you told me it would do in stopping forgotten charges and disputes at settlement time and I also find that it is a great help in collections, as they pay often and in full where they used to leave a balance. I WOULD RATHER QUIT BUSINESS THAN RETURN TO THE OLD WAY."

FILL OUT THIS COUPON AND SEND AT ONCE TO

The American Case & Register Co.
SALEM, OHIO

Form L 53
1911

AMERICAN CASE & REGISTER CO.
SALEM, OHIO.

GENTLEMEN:
Please send us your literature descriptive of the American Account Register and System, with the express understanding that I am not obligated thereby in any way.

NAME.....

ADDRESS .....

A CHEAP BRILLIANT LIGHT

IS ASSURED THROUGH THE

HERZ SIMPLEX LIGHT SYSTEM

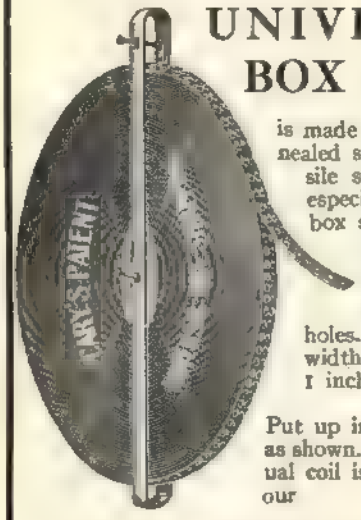
For STORES, HALLS, CHURCHES, ETC.

Its operation is 75% cheaper than electricity.
Shown herewith are all the parts necessary to a complete system of this perfect light.
THE HERZ SIMPLEX LIGHT SYSTEM costs about 50 per cent less than others because you buy direct from the manufacturer.
Ask for Folder. OUR PRICES WILL SURPRISE YOU.

Herz Mfg. Co. - - 388 Jackson St., St. Paul, Minn.

CARY'S

UNIVERSAL BOX STRAP



is made of extra soft annealed steel of great tensile strength, that is especially adapted for box strapping. Nails can be driven through it very readily without first punching holes. Made in four widths: ½, ⅝, ¾ and 1 inch.

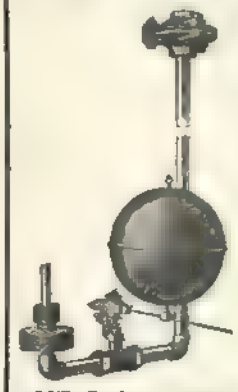
Put up in 300 feet coils, as shown. Each individual coil is equipped with our

PATENT METAL HANGER

Endorsed by the United States Government

which specifies that it be used in the packing of supplies for its various departments.

CARY MANUFACTURING CO.
19 and 21 Roosevelt St., New York



CLIMAX
CELLAR DRAINER

Drains Cellars, Cesspools, Foundations, Wheel Pits, Furnace Pits, etc.,

AUTOMATICALLY

using city water or steam supply having from 15 to 80 lbs. pressure per square inch.

Six Sizes from 80 to 1200 gallons capacity per hour.

Send for Catalog showing all Climax Plumbing Specialties.

THE C. M. KEMP MFG. CO., Baltimore, Md.

Elevators and Dumbwaiters

Made to be sold by the Hardware Trade. Can be placed in position by any carpenter.

Catalogue free.

ENERGY ELEVATOR CO.
214-216-218 New St. 243-245 Broad St.
PHILA., PA.

ELEVATORS AND DUMB-WAITERS

STRONG, EASY RUNNING, RELIABLE, SATISFACTORY

SEDGWICK MACHINE WORKS 126 LIBERTY ST. NEW YORK

CATALOGS AND PRICE LIST FOR HDW. TRADE

—BENNET—
WIRE CLOTH HOLDER

constructed entirely of metal—has many advantages for handling wire cloth. Holds eight sizes, 24, 26, 28, 30, 32, 34, 36 and 38 inches. Will not tip over and prevents unrolling. Occupies only 20 x 40 in. floor space. Stands 5½ feet high

Fully guaranteed
Best and cheapest
Write for particulars

DAVIS & SIEHL
4030 Hamilton Ave.
CINCINNATI, - OHIO

Catalog on application.

Make use of all your floor space by using one of our

ELEVATORS

WE MAKE THEM FOR

Hand, Belt and Electric Power

Our Hand Power machines have cast iron frames, are equipped with steel roller bearings fitted in brass cages, which is a guarantee of DURABILITY and EASY RUNNING.

DUMB-WAITERS and CELLAR HOISTS.

J. G. SPEIDEL, READING, PA.

BE A MASTER OF THE AIR!

CURTISS

Own an Aeroplane and Learn to Fly!

$100,000 in cash prizes is now offered for flights.

Aviators have earned $10,000 to $20,000 in one week with one machine!

CURTISS AEROPLANE . . $500
BLERIOT AEROPLANE . . $600

This price includes planes, cloth, framing, chassis, wheels, rudder, seat control, etc.

Garage Men and Automobile Dealers:

We can offer special inducements to you if you act as our agents. The proposition is just brimming with interest -get it at once!

Now is the acceptable time—there is no time like the present for getting started in a profitable business. The bicycle man took up the automobile and it proved his salvation. The automobile man can make real money selling AEROPLANES to his regular customers. Assemble sample yourself, and know it is carefully done and safe!

Send for our booklet and full particulars

BLERIOT

American Aeroplane Manufacturing Co.

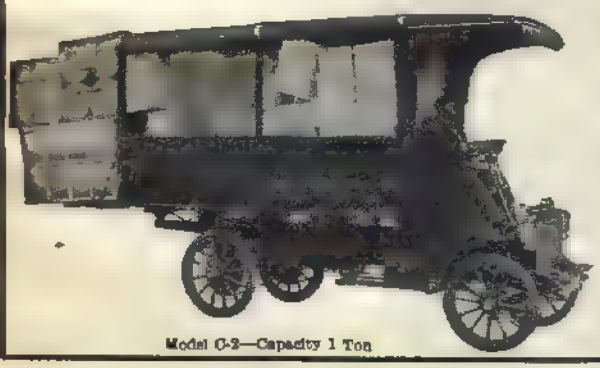
OFFICES:
Singer Building, New York
Factory: Brooklyn, N. Y.

Sheet Metal Stamping
for Automobiles

Brake Drums, Wheel Flanges, Hub Caps, Ball Cups and Retainers, Hood Supports, Step Hangers, Brake Bands, Gear Covers, Universal Joint Covers, Clutch Discs.

These are only a few of the principal parts we make for automobiles.

The Crosby Company, Buffalo, N. Y.



Model C-2—Capacity 1 Ton

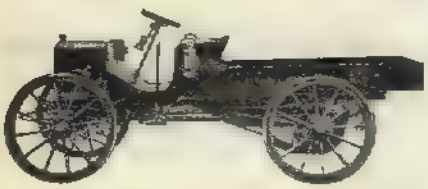
THE
STRENUOUS
RANDOLPH

A live proposition from every point of view. Built in capacities ranging from 1000 lbs. to 5 tons.

Applications for Agencies in unassigned territory considered

RANDOLPH MOTOR CAR CO.
175 E. RANDOLPH ST., CHICAGO, U. S. A.

DEALERS WANTED
TO SELL
"The Car That Saves Money"

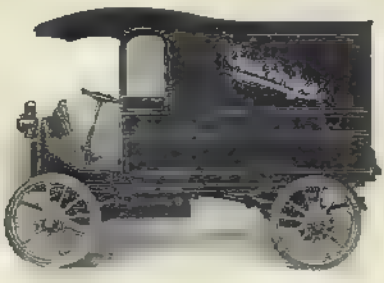


The commercial car is the future money-maker. Unlimited field, quick sales, good profits. The delivery car of durability, dependability, and reliability is the

SULLIVAN

Always ready—never quits. Strong, costs little to run; capacity, 800 pounds. Three styles bodies, 16 H. P. motor, 2 cylinders, 4 cycle, unit power plant. Visit our factory—let us prove everything. Write for catalog and terms. Prompt delivery of demonstrating cars.

SULLIVAN MOTOR CAR CO.
620 East Avenue ROCHESTER, N. Y.



AGENTS—

Take advantage of the motor truck market by handling Van Dyke trucks.

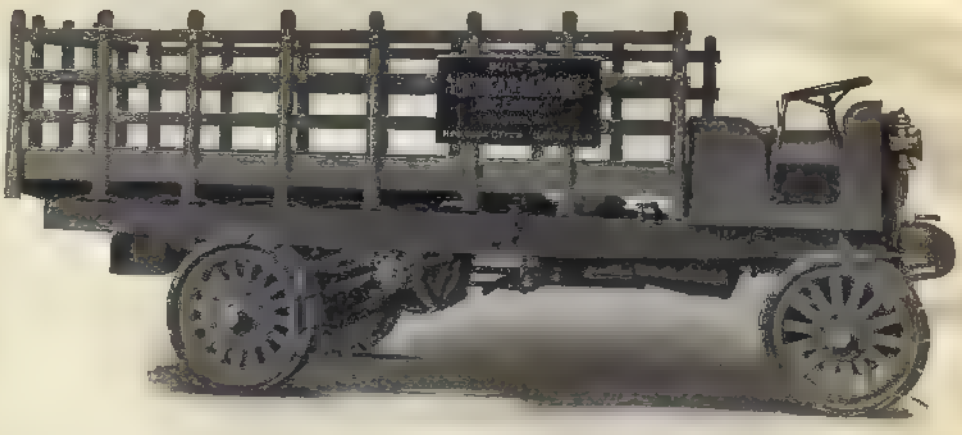
Built to meet the increasing demand for delivery trucks.

Write for our proposition.

Van Dyke Motor Car Co.
8 Leavitt Street : Detroit, Mich.

STRENGTH—POWER—BALANCE

IN A CLASS BY ITSELF



TYPE 6—GASOLINE—HYDRAULIC—5 TONS

NO CLUTCH

NO CHANGE SPEED GEARS *NO SKILLED DRIVER NECESSARY*

SINGLE LEVER CONTROL

BUILT BY AMERICAN-LAFRANCE FIRE ENGINE CO. ELMIRA, N. Y. U. S. A.

THE DAVIS TRUCK MOTORS

One-Ton Truck Motor

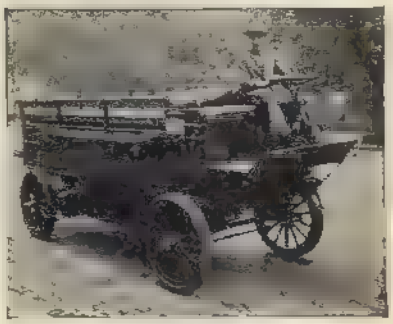
Are you interested in the manufacture of a motor truck? If so, buy a motor that has been designed especially for the commercial car.

Guaranteed non-adjustable oiling system, governor controlled.

We manufacture eight different types, both two and four-cylinder, for the pleasure car, aeroplane and truck. Write for catalog

DAVIS MANUFACTURING CO.

15th Avenue and Park Street, Milwaukee



Westinghouse Vehicle Motors

Can be applied to any construction of wagon and will outlast the wagon. Wearing quality is one of their strong features.

How about those wagons of yours? Are they equipped with the right motors?

Send for Circular 1059

Westinghouse Electric & Mfg. Co.

Pittsburg, Pa.

Sales Offices in all Large Cities.

AMES

Back Yards are Being Used for Garden Plots

¶ Perhaps you've always thought of the farmers—the market gardeners—as being the only possible customers for agricultural implements—Seeders and Cultivators for example. But give the matter a thought—wouldn't the "amateur" gardener—the average householder who works his own private garden plot—appreciate some of these labor-saving time-saving, garden implements if he only knew of their existence?

¶ Of course you're looking out for "No. 1." Your business and your profits are uppermost in your mind. Then take simply a mercenary view of it. The creating of this business means to you just what you're after—increased business, increased profits.

¶ And coming down to the question of choice in selecting the kind and brand of implements to stock, bear this fact in mind, that the

AMES NEW UNIVERSAL HAND SEEDER

With Cultivating Attachments

will insure for you not only [illegible] profits from this class of your business but will also give the greatest satisfaction to the [illegible] gardener as well as to the farmer.

¶ Made on 'Ames' honor. Practical, strong an implement which offers every consideration necessary for thorough and quick seeding and cultivating.

¶ We want to send you full particulars regarding this implement. Get in touch with us and let us tell you where there's good business which has heretofore escaped you.

Your Name and Address will Bring a Catalog

AMES PLOW CO.

Quincy Hall Boston, Mass.

C

A Profit of Dollars
Versus
A Profit of Pennies

It takes no longer for you or your clerk to interest an owner of horses to the point of buying a

Stewart Ball Bearing Clipping Machine than it does to sell him any one of a hundred other articles.

The real advantage to you is that when a Stewart Clipping Machine is sold, your profit is dollars as against pennies for your profit on most articles.

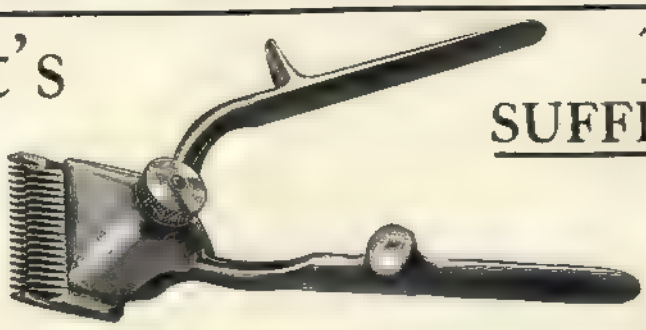
From now to May is the best time of the year on these machines

Your jobber has them. Write us for New 1911 Catalogue.

In Operation

CHICAGO FLEXIBLE SHAFT COMPANY, 606 La Salle Avenue, CHICAGO

Priest's



THAT'S SUFFICIENT!

Catalogue on application.

Clippers

AMERICAN SHEARER M'F'G CO.
315 Main Street, NASHUA, N. H., U. S. A.
Wiebusch & Hilger, L't'd, Selling Agents, 106-110 Lafayette St., New York City

The Steel Spring Snap That Has A "SNAP"
IT IS IN THE SPRING

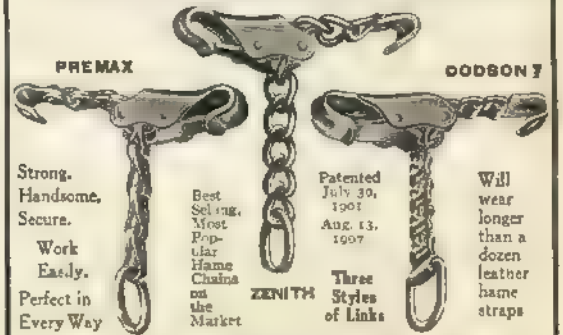
NEATEST-STRONGEST-SAFEST

Do not accept the "just as good" kind.
Demand the "POLO"—it will cost you no more.

ASK YOUR JOBBER FOR THEM

COVERT MFG. CO., Troy, N. Y.

STEEL HAME CHAINS



Strong. Handsome. Secure. Work Easily. Perfect in Every Way

Best Selling. Most Popular Hame Chains on the Market

ZENITH

Patented July 30, 1901 Aug. 13, 1907

Three Styles of Links

Will wear longer than a dozen leather hame straps

Folder on Request. Sample to Interested Jobbers

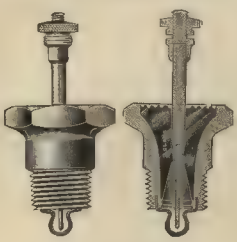
NIAGARA FALLS METAL STAMPING WORKS NIAGARA FALLS, N. Y.

Don't say "*Give me a Spark Plug*" —you may get any kind.

ASK FOR THE

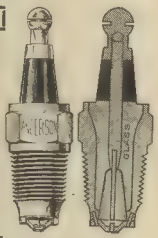
ANDERSON GLASS-AND-STEEL SPARK PLUG

AND YOU WILL GET THE BEST KIND



Model A.
Licensed Price, $1.50

"*A Window to the Engine*"



Model B.
Licensed Price, $1.50

Better pay $1.50 once, than a dollar a dozen times—that's about the ratio of Anderson Spark Plug life compared with ordinary spark plugs.

Read How the Anderson Spark Plug Is Constructed

Glass insulators welded to the steel shell and central electrode into one integral mass—the flash of the explosion is shown through the glass.

No packing! No loose, leaky joints!

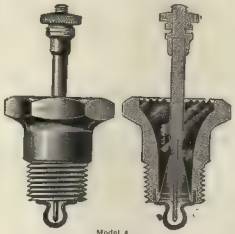
Absolutely gas-tight under highest pressure!

ANDERSON GLASS-AND-STEEL SPARK PLUGS now are offered in a new model with small diameter shell and a mica stem, styled the Model B.

ANDERSON SPARK PLUG COMPANY
WASHINGTON, D. C.

ANDERSON

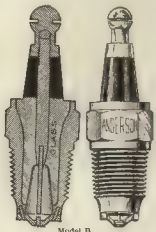
GLASS-AND-STEEL SPARK PLUGS



Model A.
Licensed Price, $1.50

"A Window to the Engine"

Glass insulation, the glass being welded to the steel. Absolutely the strongest, most enduring and certain plug on the market, although of glass.



Model B.
Licensed Price, $1.50

Anderson Glass-and-Steel Spark Plugs now are offered in a new model with small diameter shell and a mica stem, styled the Model B. The basic principle of glass insulation welded to the steel shell and central electrode into one integral mass obtains in both models, and the flash of the explosion is shown through the glass insulation of Model B as in Model A

JOBBERS: WRITE FOR QUOTATIONS.

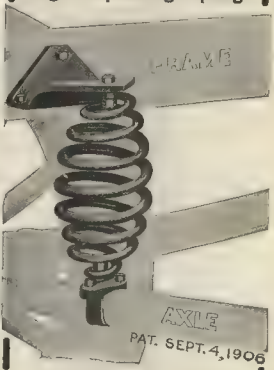
For terms to jobbers, please address Anderson Spark Plug Co., Washington, D. C., or W. F. Lord, 100 Boylston Street, Boston, Mass. Forward all orders to factory, 206 N. Holliday Street, Baltimore, Md.

Anderson Spark Plug Co.
WASHINGTON, D. C.

DON'T EXPERIMENT

Accept a Proven Shock Absorber
18 Manufacturers Endorse

Sager Equalizing Springs



SEVEN YEARS OF SUCCESS

Oldsmobile—"The 'Sager Device' presents advantages not found in other so-called 'shock absorbers.'" OLDS MOTOR WORKS

Elmore—"We are entirely satisfied with them." ELMORE MFG. CO.

Pierce-Arrow—"They make Pierce Cars ride like a cushion." S. K. PIERCE

Crawford—"They add greatly to comfort and reliability." CRAWFORD AUTOMOBILE CO.

Logan—"We find them indispensable." LOGAN CONSTRUCTION CO.

Dorris—"Our customers are more than satisfied with them." DORRIS MOTOR CAR CO.

Rambler—"Have given us excellent satisfaction." THOMAS B. JEFFERY CO. (Rambler)

Stoddard-Dayton—"The success of your shock-absorbers has interested us considerably." THE DAYTON MOTOR CAR CO. (Stoddard-Dayton)

Autocar—"Used your springs with splendid success." THE AUTOCAR CO.

Pope-Hartford—"We found your springs to be satisfactory." POPE MFG. CO.

Columbia—"Sager Springs steady my Columbia wonderfully." W. B. LASHER

Fittings for all Cars

We make Sager Non-Rustible Bumpers. Spark-o-Lite to light lamps while car is moving.

Interesting Booklet on request

J. H. SAGER CO.
263 South Ave., Rochester, N. Y.

The 1912 Hudson "33"

For the coming season the Hudson Motor Car Company, of Detroit, Mich., is offering four models, three of which we illustrate. The touring car, not shown, is somewhat similar in design to the torpedo except that the body lines are not so straight and rigid. The price of all models is $1600, and the chasses are identical

Motor.

The motor is of the four cylinder en bloc type, rated at 33 h. p. and having a bore of 4 in. and a stroke of 4½ in., giving a bore to stroke ratio of 1.125 to 1. The piston displacement is 50½ cu. in. per cylinder and the car comes in class 2-B, 161-230 cu. in. under the A. A. A. contest classification. The valves are all on the left side of the cylinder, forming an L head type. Ignition is by Bosch duplex system, consisting of storage battery for starting and a magneto distributer driven by spiral gears. The motor is water cooled by a centrifugal pump, the water being cooled by a reinforced vertical tube radiator assisted by the fan-spoked flywheel. The motor itself is suspended at four points on the frame side members. A Stromberg water-heated carburetor is used

Lubrication.

Lubrication is by a constant-level splash system, with reservoir beneath motor. A plunger pump operating without noise from cam shaft, furnishes a constant flow through sight feed on dash, thence to motor time gears and into crank case. Grease cups are provided on all spring shackles and at every point requiring grease lubrication. Every part requiring attention is easily accessible.

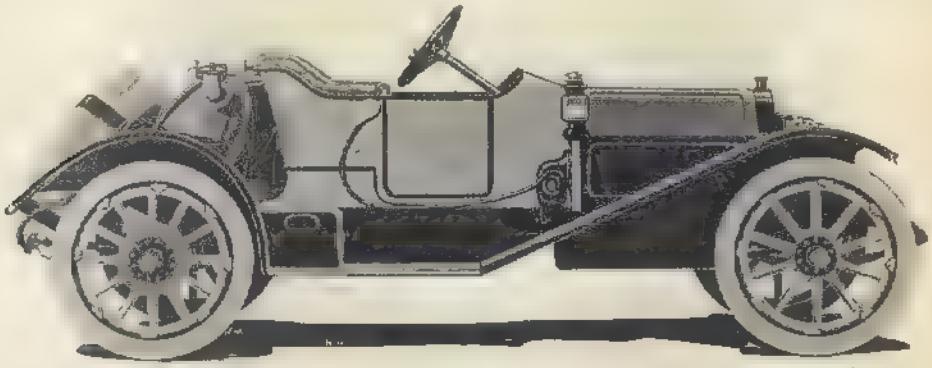


Fig 1. Hudson "33" Fore-door Roadster. Price $1,600. The wheel base is 115 in. and gauge is 56 or 60 in. as desired. The springs are semi-elliptic, front and rear. The rear axle is of the full floating type and the front one is I-beam section.

Clutch and Transmission.

An improved type of multiple disc clutch with cork inserts is used. It is contained within an oil-tight compartment of the flywheel. It will not grab in getting under way nor slip under load, and is noiseless It requires very little attention.

The transmission gear set is of the selective type, with three speeds forward and reverse Direct drive is on third gear. Heavy roller and ball bearings are provided. Transmission case is bolted direct to rear of motor, assuring perfect alignment of crank shaft and clutch.

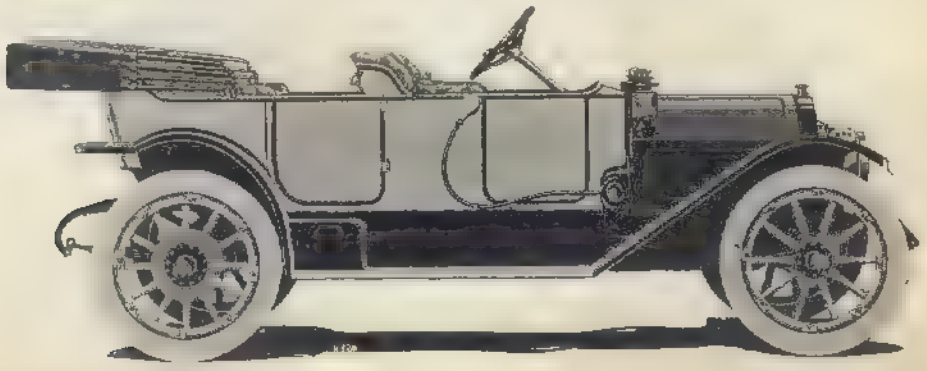


Fig 2. Hudson Four-passenger Torpedo Car Price $1,600. The motor is 33 h. p. with four cylinders, 4 x 4½ in., giving a bore to stroke ratio of 1.125 to 1. The piston displacement is 50½ cu. in. per cylinder.

The final drive is through heavy single universal joint and bevel gears. The propeller shaft is inclosed in a dust-tight torsion tube.

Axles, Brakes and Wheels.

The rear axle is of the full floating type with extra heavy shafts and bearings and has a double row of annular ball and Hyatt high duty roller bearings

Other Details.

The wheel base is 115 in. and tread either the standard 56 in. or 60 in. The spark and throttle levers are on top of the steering column. An accelerator pedal is also provided. The gear ratios are 3½ to 1 on all cars except the Mile-a-Minute Roadster, which is 3 to 1. The steering gear is of the irreversible worm and gear type. An

Fig. 3. Hudson Mile-a-Minute Roadster. It is equipped with mile a minute Warner autometer and has magneto ignition only. Storm apron of special design instead of top or wind shield.

The front axle is a single piece I beam drop forging with extra heavy spring seats and steering knuckle forks to withstand heavy shocks.

The brakes are double on the rear wheels. An improved system of leverage makes them easy and efficient. The brake drums are 12 in. in diameter and 2 in. wide. The service brake is operated by the foot pedal, external contracting. The emergency brake is internal expanding and is operated by the hand lever.

The wheels are of the artillery type, 24 in. in diameter with full rounded 1⅜ in. spokes. The front wheels have ten spokes and the rear twelve. They are fitted with demountable rims. The "mile-a-minute" Roadster wheels are 32 in., of the same construction.

18 in. steering wheel assures easy control of car. The gasoline tank capacity ranges from 17½ gallons on the torpedo to 30 gallons on the roadster models. The weights are between 2478 lbs. and 2545 lbs.

Springs and Bearings.

The springs are semi-elliptic in front, 37 x 2 in. The rear springs are ¾ elliptic, 47 x 2 in. The spring eyes are bushed.

All bearings are either roller or ball, except the shaft bearings in the motor which are phosphor bronze lined with German nickel Babbitt.

Equipment.

The equipment consists of storage battery, oil and gas lamps, Prest-O-Lite tank or generator, top, windshield, license carriers, set of tools and tool box, coat and foot rails and cocoa floor mat

The Findeisen & Kropf Manufacturing Company, makers of the Rayfield carburetor, in Chicago, Ill., entered the racing game this year for the first time, and already have had their carburetor on a large number of winning cars. In fact, in the twenty days from May 30th to June 21st, the Rayfield carburetor was used by twenty winners in big races. Starting with the Indianapolis 500 mile race, the Rayfield was on the second car to finish, and also on the Knox which made the fastest lap at 82.6 m. p. h.

REO ADDS $1,000 CAR TO LINE

The Reo Motor Car Company, of Lansing, Mich., has added a car selling for $1,000 to its line. This has a 30 h. p. motor 4 x 4½ in., and the regular characteristics of the Reo 4-30 model at $1,250

KISSEL ENLARGING PLANT

The Kissel Motor Car Company, of Hartford, Wis., has purchased an acre of ground adjoining its plant, and is planning two additions.

TWELVE PRIVATE OWNERS START FOR 'FRISCO

The largest transcontinental tour so far attempted, and remarkable for consisting entirely of private owners, twelve Premier owners left Atlantic City June 25th, bound for San Francisco. The trip, as outlined, is somewhat strenuous, 36 days being allowed to cover the 4000 miles, and 11 days for sightseeing. From Chicago the route will be that taken last summer by L. L. Whitman, when he drove a Reo cross-continent in 10 days, 14 hours

lower grade of gasoline, possessing more heat units, and the three gasoline adjustments, resulting in a carburetor of more power and economy in fuel.

The carburetor is made in two sizes only —1¼ in. and 1½ in. and lists at $32 and $35.

SMITH GASOLINE METER

The Smith gasoline meter is built upon the same principle as the commercial weighing scale, which principle is modified and adapted for measuring the height of gasoline. It consists of a float 3 in. in diameter which moves vertically in the gasoline tank, in a surge tube which prevents the surging of the liquid from affecting the accuracy of the reading.

A cable is affixed to this float and is carried through a series of angle blocks containing wheels and brass tubes to the dash board where the meter is located.

Smith Gasoline Meter.

The meter is provided with different dials for various shapes and capacities of tanks, and through the medium of the cable, at all times registers the amount of gasoline in the tank in gals. It is accurate and may be depended upon. It shows motor efficiency. It insures that when purchasing gasoline you obtain full measure. It indicates leaks and loss of gasoline. It saves a great deal of worry by giving a constant record on the dashboard of your gasoline supply. The tank never has to be opened, except for filling and the passengers of the car never disturbed to find out how much gasoline you have, nor are they worried by the use of a light near the gasoline tank. The effect of keeping the gasoline tank closed is to minimize carburetor troubles as no dirt gets into the tank.

These meters have only been on the market a short time but are already in use by the largest concerns in New York City, who have found their use very advantageous. The meter itself is 3 in. in diameter, handsomely finished and is an ornament for any dashboard. It sells for $15. It is made by the Smith Gasoline Meter Company, 1777 Broadway, N. Y. City.

WOHLFELD'S LUNCH KIT

The lunch kit illustrated herewith is made by the Wohlfeld Trunk and Bag Company, 538-40 N. 3rd Street, Philadelphia, Pa. It is designed to be attached to the running board

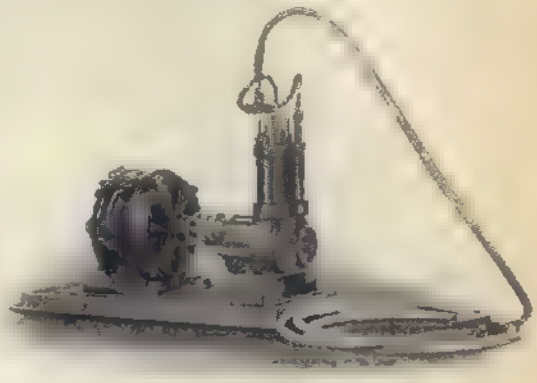
Wohlfeld's Lunch Kit

so as to be instantly available. It is made of kiln-dried basswood, covered with heavy black enamel duck and has a full equipment for four or six persons of plates, knives, forks, cups and napkins. The kit is equipped with a tray for carrying two quart vacuum bottles, beneath which is a space for the luncheon. Cowhide straps are provided for attaching the box to the running board. The price is $15.

ARTIZAN BRASS SPECIALTIES

We illustrate herewith three specialties of the Artizan Brass Company, of Chicago, Ill

The motor-driven garage pump supplies air direct to the tire, doing away with the storage tank.



A. B. C. Motor driven Garage Pump

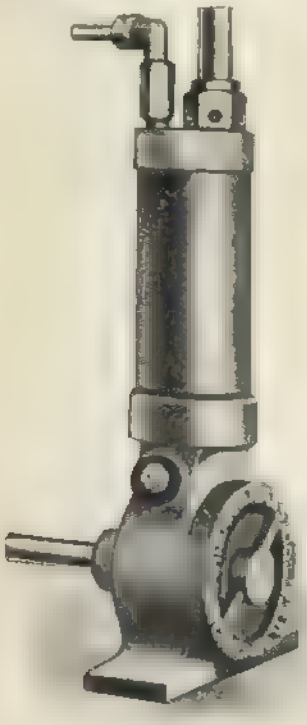
The pump is connected to a ⅓ h. p. standard type electric motor, equipped with 25 feet of the best hose, a safety relief valve and connections, mounted on a cast iron base on wheels. The gears are enclosed and submerged in the best lubricant. The outfit can be run from an ordinary lamp socket.

An ordinary tire can be inflated in from one to two minutes.

This pump can be used for many other purposes, such as brazing, small pneumatic tools, and lifting cranes, etc.

It sells for $80 with D. C. motor and $90 with A. C. 110 v. 60 cycle motor

The A. B. C. engine-driven tire pump is designed to be permanently attached to the car, being driven by the motor, through gears. It may be disconnected by means of a sliding gear.



A. B. C. Engine driven Tire Pump.

Cylinder made of close-grain cast iron, ground internally to 1⅜ in. in diameter, piston also of close-grain cast iron, 2 rings, with 2 in. stroke. Crank bearings are of best Babbitt metal and interchangeable, when worn.

The pump, at a speed of 500 r. p. m., delivers 1,400 cu. in. air per minute, while a maximum speed of 1,200 revolutions can be attained, but it is not necessary.

The weight of each pump, complete, is only 6 lbs., and the length but 10 in. Accompanying each pump is tire connection, hose and safety relief valve, instantly adjustable to any desired pressure. The pump sells for $25

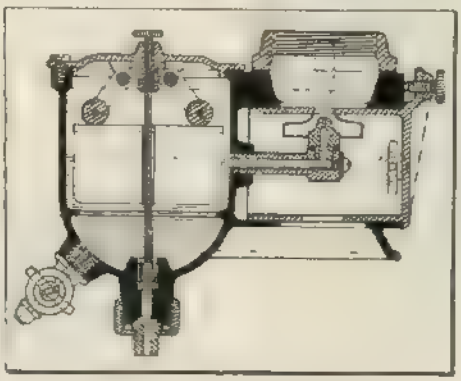
The A. B. C. wash gun is a new device for the purpose of cleaning grease, grit, dirt, etc., from corners and crevices where it is impossible to reach with the ordinary

A. B. C. Wash Gun

method of cleaning. It holds about one qt. of gasoline and when pumped up to a pressure of 100 lbs. will instantly cut and wash dirt which accumulates on the machinery of a car. It sells for $5.

EUREKA CARBURETOR

A special two-cycle carburetor is being manufactured by the Variable Power Gas Engine Company, 52 Wall Street, New York City, an illustration of which is shown herewith. This instrument consists of a gasoline reservoir with a float and valve which automatically maintains the level, and a mixing chamber in which rotates a piston throttle having windows cut for the gas and air. Inside the mixing chamber is a spraying nozzle which regulates the quantity of gasoline drawn in the motor by the suction, pro-



Section through Eureka Carburetor.

portionate to the speed of the engine. There is no needle valve to set or air valve to regulate. A simple turning of the throttle varies the charge delivered to the motor in proportion to the speed of the engine, and this gives a high degree of flexibility. This carburetor has been designed to meet the requirements of the two-cycle motor of both the two and three-port type, and its use will enable the two-cycle motor to run with the same degree of smoothness and flexibility as any of the four-cycle type. The price varies from $12 for the one-inch standard size pipe thread to $40 for the 2½ in. size.

1912 Peerless Models

The Peerless Motor Car Company, of Cleveland, O., is offering for the season of 1912, five different powered chasses of 38 h. p. six cylinder, 48 h. p. six, 60 h. p. six, 40 h. p. four, and 26 h. p. four.

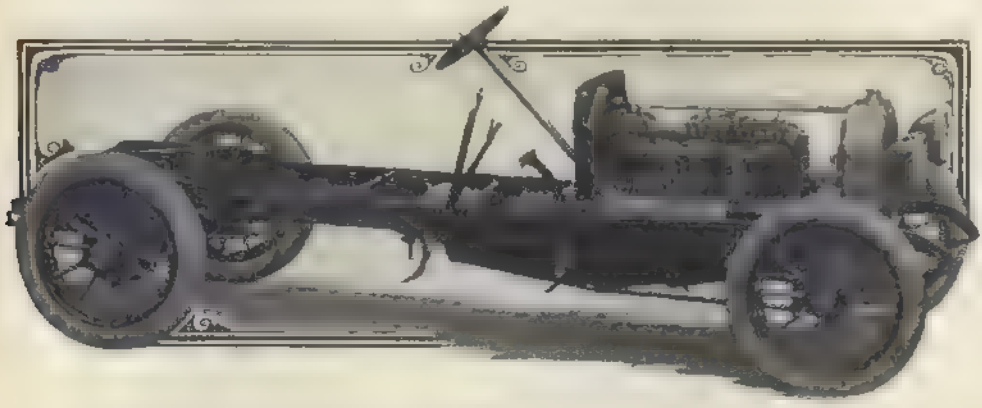
The straight line body in its extreme has been adopted, the king of the Belgians type having been discarded. Another noteworthy feature is swinging foredoors opening from the front. The reason for this is that the doors may be hooked partially open, say eight inches, thus allowing the air to enter and afford free ventilation for the feet and legs. Later it is proposed to have these foredoors supplanted by a molding, so that the entire front may be left open without detracting from the finish of the car.

Again it is to be noted that this year there is nothing on the dash but the switch. Another feature is the four-cylinder mechanical tire pump attached to the transmission case. The operation of the pump is controlled by a lever conveniently located for the driver, with hose connection always attached to pump and sufficiently long to reach any wheel. When not in use this tube is coiled in a compartment under the driver's cushion.

Peerless cars for the season of 1912 are made in five standard models. Probably the most interesting information contained in the announcement just published is in regard to the two new "sixes," rated at 38 h. p. and 48 h. p. The Peerless Company has built a large six-cylinder car the past four years. This model and the two four-cylinder cars are continued for 1912.

The medium size "six," one of the new models, has a 4½-in. bore and 6-in. stroke, and is rated as 48 h. p. Although smaller than the big "six," it has an abundance of power and is a good hill climber. Liberal tire equipment is furnished on wheels of the same diameter, making it possible to interchange tires on the road. This chassis can be equipped with any style body. The long wheel base permits the use of closed bodies with liberal dimensions, and insures easy riding.

The small "six," rated at 38 h. p., has 4 in. bore and 5½ in. stroke. The tires, as on other models, are extra large, and also interchangeable. This chassis can be equipped with five passenger touring, runabout, torpedo, limousine, landaulet, Berlin or coupe type of body. This size is especially well adapted for a gentleman's roadster.



Side view of chassis showing six cylinder motor with cylinders cast in pairs, upsweep of frame over rear axle and front spring mountings. The transmission is located in the middle

The large four-cylinder car, rated as 40 h. p., has 5 in. bore and 5½ in. stroke. This model is so well known to automobile users that it needs no further introduction.

The small, four-cylinder car is the "Peerless town car," and is regularly equipped with luxurious and completely appointed limousine and landaulet bodies. The motor is the same size as heretofore—4 in. bore and 4½ in stroke. The short wheel base and low entrance of this car make it very desirable for city use.

All open bodies will be equipped with top, glass front, foot rest, coat rail, tire bracket and tire pump

Bosch double synchronized type of ignition is used on all models, furnishing two complete and independent systems, with current available from either the high tension magneto or from the storage battery. This arrangement does away with coil box which, on previous models, had been attached to the dash. The switch, conveniently located, controls current for magneto or battery and both in combination. It also can be locked, making the motor inoperative. The Peerless wire bar is continued, but in a slightly altered shape to meet the requirements of the above described ignition system. All wires are connected by a spring attachment at terminals.

A PAGE OF PEERLESS 1912 MODELS.

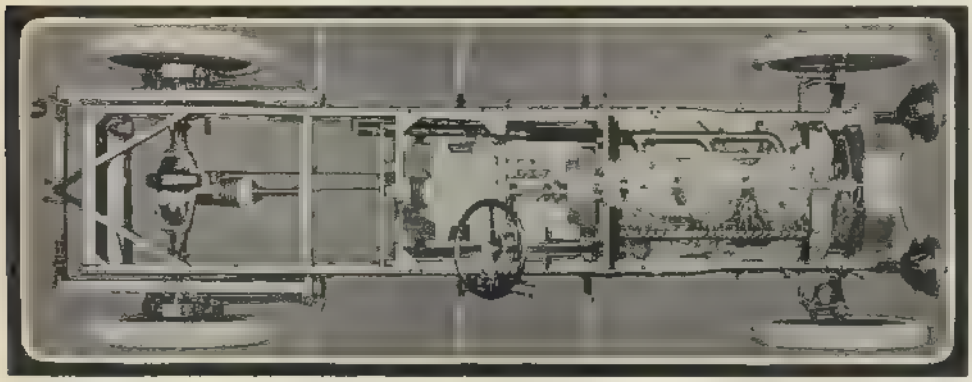
The upper left-hand corner shows the Three-Passenger Roadster with 125 in. wheel base and 38 h.p. six-cylinder motor. Beneath it is shown the Seven-Passenger Limousine with 137 in. wheel base and 48 h.p. six-cylinder motor. The lower left-hand view is also a Three-Passenger Roadster. The upper right-hand cut is of the Six-Passenger Torpedo Type with 140 in. wheel base and a 60 h.p. six-cylinder motor. The remaining view is that of the Seven-Passenger Touring Car with 125 in. wheel base and 40 h.p. four-cylinder motor.

One of the features of Peerless cars for the past two years has been a small lever under the hood which simultaneously opens both crank case pet cocks, furnishing a complete and positive method of determining the proper crank case oil level without the necessity of reaching under the motor. This device has been further improved for 1912 by placing the control lever in such a position that it is impossible for the hood to be closed and fastened until the pet cocks have been closed

All "sixes" have seven main crank shaft bearings, with a two-piece crank case, split horizontally through the motor axis, and suspended (front and rear, direct from the main frame members) by drop forged steel I-beams

The motor starting priming pump is actuated by handle at front end of chassis. The priming pump valve lever, however, is placed on the dash, immediately below the carburetor air valve levers. This disposition brings together on one plate on the dash the three levers for complete carburetor control. The intake manifold from the carburetor is the most simple straight line type; the small pipes from the priming pump being within the intake manifold, the priming mixture being sprayed direct to each cylinder, immediately under the intake valve.

The Gray and Davis lighting system has been adopted as a standard equipment on all models. The generator is mounted on a special aluminum pad, supported from



Top plan view of the Peerless chassis. Attention is called to the straight lines of the frame. At the front the side members come in slightly

Direct motor lubrication is by the splash system, oil being fed to the crank case compartments by an oil pump, gear driven from the cam shaft. Grooves and pockets on all faces of interior crank case partitions or headers between each bearing, as well as cups on either side of all connecting rods, immediately over the bearing, provide means whereby all crank shaft bearings are continuously flooded.

Water circulation is by means of direct driven gear pump, located on the left side of the motor, immediately to the rear of the front case. Radiator is the horizontal tube-and-fin type, the same as on previous Peerless models

The special Peerless type centrifugal governor is located on the right side of the motor, immediately to the rear of the front case; the magneto being driven by the governor shaft.

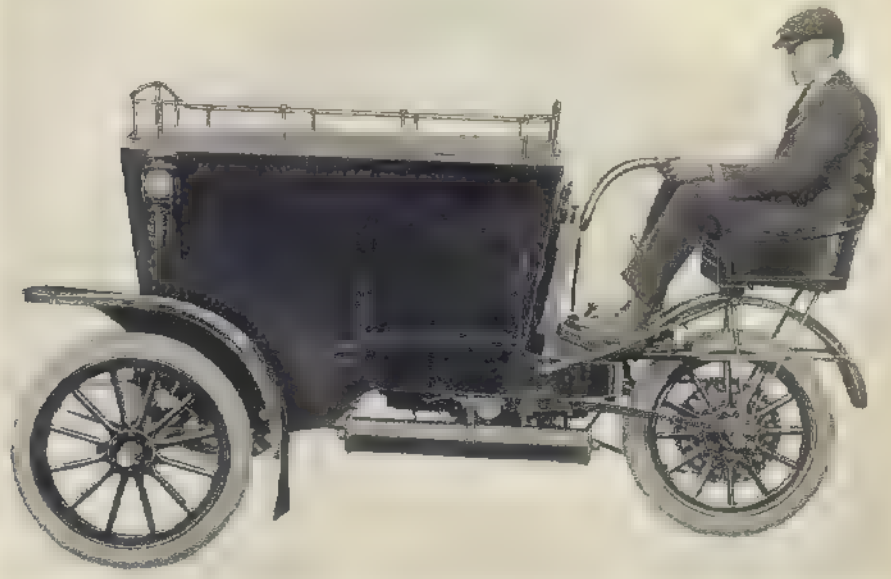
The new Peerless equalizing carburetor, with special type balanced throttle and both primary and secondary auxiliary air valves, has been adopted. Both main and auxiliary air intakes are screened, and the respective passages have damper valves, which are actuated by small levers on the dash.

the crank case on the forward left side of the motor, and driven by means of a laminated leather belt from a pulley on the pump shaft. A special dash set, including ammeter, automatic electric cut-out, junction box and light control switch, all incident to the special development of the Gray and Davis system, to meet Peerless requirements, is located on the forward right side of the dash, under the motor hood. The ammeter dial and light control switch only appear on the rear, or operating side, of the dash.

The Peerless expanding band clutch lining is about 33 per cent. cork, inserted in a base fabric of chrome tan leather. Transmission case is suspended from a sub-frame, near the center of the chassis, the construction being the well known Peerless selective type, four speeds forward and reverse, all controlled by one lever. The rear axle is the full floating type with camber, permitting of the arched construction to the entire rear axle unit. The spring suspension consists of two semi elliptic front springs, the rear combination being full platform type with two semi-elliptic side and one cross. The spring units are special

Peerless design, being essentially slow-acting and work-absorbing, so as to reduce to a minimum the oscillating period of the car

It is worthy of note, although standard models are right-hand drive and control, that all six-cylinder models can be furnished in left-hand drive and control, if so ordered.



New Model N Motorette. Price $500.

The C. W. Kelsey Manufacturing Company, of Hartford, Conn., has designed a new model of their well known Motorette. This is the illustrated Model N. It is 9 ft. over all and the width is 5 ft. 3 in. over all. The height from the top of the carrier to the ground is 4 ft. 3½ in. The package carrier is 4 ft. long, 31½ in. wide and 27½ in. deep in the front part. You will notice that the Motorette frame is dropped in front, which allows of large package carrying space. The package box contains 28 cu. ft. and is designed to carry 500 lbs.

The Model N is easily loaded and unloaded through large double doors located in front. In addition to this there is a door on each side. There are also double doors on top, directly in front of the operator. These doors open into a compartment 23 in. long, 31½ in. wide and 7 in. high, designed to carry small packages. This compartment is especially accessible to the driver, since he can unload without leaving his seat.

The Model N power plant is readily accessible through the side doors. When these are opened, it will be noticed that the metal floor is in two sections and that these sections lift up on hinges. By folding them back the transmission engine, etc., are completely exposed.

The Model N Motorette is equipped with 3 in. automobile tires on the front wheels and a 3½-in. automobile tire on the rear, the rear wheel being 25 in. in diameter rather than 28. The package capacity is 500 lbs., and the speed 20 miles an hour.

KELSEY INCREASES CAPITAL

Due to the exceptionally large demand for Motorettes, the C. W. Kelsey Manufacturing Company, of Hartford, Conn., has increased its capitalization from $250,000 to $1,000,000.

Having secured all the available space in the old Cheney Silk Mill Building, it has been found necessary to build a large addition, upon which work will begin at once.

Besides two passenger Motorettes, the Company is now marketing two types of light delivery cars, having a capacity of 250 and 500 lbs. respectively. Motorettes are now being turned out at the rate of 15 to 20 a day.

FIRE CHIEFS TO MEET

The International Association of Fire Engineers will hold its annual meeting in Milwaukee, Wis., Sept. 19 to 22. Indications point to big doings, with automobile apparatus to the fore in an exhibition of fire apparatus.

CARTERCARS FOR DETROIT FIRE DEPARTMENT

The battalion chiefs of the Detroit fire department will hereafter ride in Cartercars, made by the Cartercar Co., of Pontiac, Mich. Five 30 h. p. model H cars have been ordered.

Chalmers Cars for 1912

Each seasonal announcement by the Chalmers Motor Company is a matter of widespread interest. This year's announcement is doubly interesting, for it brings to the public attention one entirely new model—the Chalmers "36." For 1912 the Chalmers line will consist of three chassis models carrying thirteen different body types.

Foremost among these is the Chalmers "36," the new model which embraces some of the most distinctive and advanced features of the year. In the "36," designer George W. Dunham has endeavored to incorporate all the things most desired by the motor public

Four body types—Foredoor Touring Car, Foredoor Pony Tonneau, Berlin Limousine and Cab Side Limousine—are built on a chassis of 115-in. wheel base. The motor develops full 36 h. p. and is of the most approved long stroke type, 4¼ in. bore, 5¼ in. stroke. The crank shaft is of the same short stubby two-bearing type which has been made famous by the Chalmers "30." Cylinders are cast en bloc with brass jacketed intake valves, heads and exhaust valves at side. Distinctive features of the motor are a new piston ring, an extraordinarily large cam shaft and push rod tappets of extreme size, making the operation of the cams noiseless; extremely heavy rocker arms and a new crank case construction which protects the upper working parts of the motor from all road dirt. Lubrication is of the constant level splash system with gear pump. Fedder's cellular radiator with large centrifugal pump cools the motor. Bosch dual ignition system with single set of spark plugs is used. The clutch is of the multiple disc type, consisting of forty alternating phosphor-bronze and tempered saw steel discs.

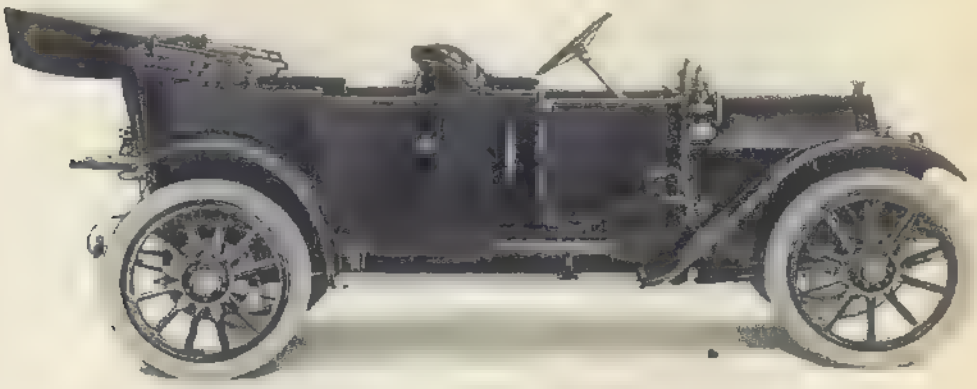
A new and distinctive feature of the "36" and an innovation among medium priced cars, is the four-forward speed transmission, designed and built in the Chalmers shops

A new type of accelerator, combining the button and vertical lever types, is used. The Chalmers single pedal control, so popular on the "30," is retained on the "36."

On the new model is used the Rayfield carburetor, a clever and convenient feature of which is a dash lever by which the needle valve may be adjusted for light or rich mixture without leaving the driver's seat. All types of the "36" are provided with gasoline pressure system.

Self Starter.

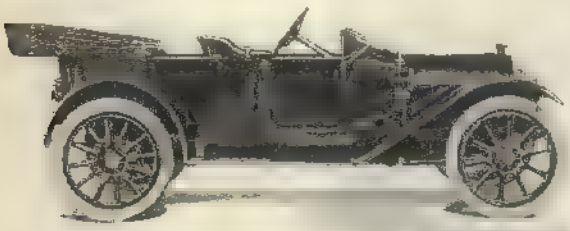
Perhaps the most distinctive feature of the Chalmers "36" is the air pressure, self-starting device with which all types are equipped. The Chalmers self-starter, which is built in the Chalmers factory, is not an accessory, but an integral part of the power plant. A check valve in the head of the number one cylinder stores air under pressure in a tank carried beneath the body. A dash valve releases air from this tank, which is carried to a distributor operating upon the same principle as the commutator used on all cars having double ignition system. By this distributor the compressed air is sent into the cylinders which are ready for the working stroke in their order of firing; in other words, the motor of the Chalmers "36" is operated by compressed air instead of by cranking, until the regulation ignition starts to work. This new feature of the Chalmers "36" has been tested on three different cars in more than 20,000 miles of driving. It has never once failed to work. Some idea of the power of the self-starter may be gained from the fact that it is possible to set the gears in second speed, shut off the ignition system



The New Chalmers Thirty-six.

Fore-door touring car, $1,800. Motor 36 h. p., long stroke type, 4¼ x 5¼ in., has been improved with exclusive features in a new piston ring, large cam shaft and push rod tappets. Bosch dual ignition system. The transmission is of the four-speed type designed and built in the Chalmers plant. The clutch is of the multiple disc type. Wheel base 115 inches.

and actually drive the car from stand-still, using compressed air to run the motor. The only circumstance under which the Chalmers self-starter will fail to work is when the motor is on dead center, a condition which seldom exists in a ball-bearing motor. In such circumstances the crank has to be used to turn the motor an inch or two, when the self-starter will do the rest.



Chalmers "Thirty-six" Fore-door Pony Tonneau, $1,800.

Both these cars are built upon the regular "Thirty-six" chassis.

In connection with the self starting device is a tire inflator which, combined with Continental demountable rims, with which all types are equipped, removes practically all the inconvenience of tire trouble.

The axles of the Chalmers "36" are equipped with Timken roller bearings. Extra large, silent type annular ball bearings are used throughout the power plant. Drive is by shaft or bevel gear. Two universal joints and pressed steel torque arm are used.

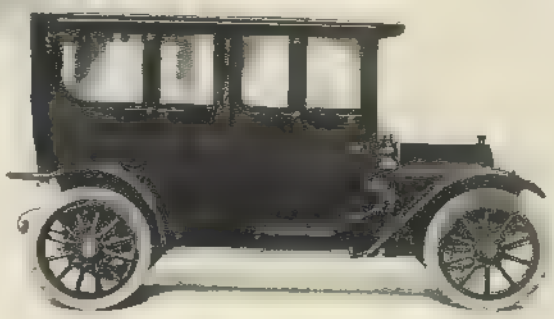
A new type of pressed steel rear axle housing, showing greater strength and quite as silent as the older style cast housing, is used

All bodies are of the full foredoor type with forward compartments ventilated. Bodies are of heavy sheet metal construction and a novel feature is the lining of leather in place of highly polished wood All dashes are built integral with the bodies, and given the same finish. Double drop channel section pressed steel frames are used and all bodies are low hung. Seats are low and tilted backward. Floor boards and running boards are carpeted with gray battleship cork linoleum.

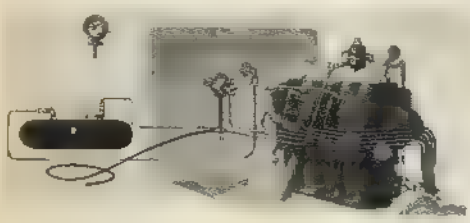
The touring car body regularly has a five-passenger capacity, though a seven-passenger body is also built. The Foredoor Pony Tonneau is of the four passenger capacity.

Two enclosed cars—a Berlin limousine and a cab side limousine—are built on the "36" chassis. Both are of seven-passenger capacity with seats for five inside

All bodies have the long straight line effect and are finished in a wide variety of colors, including Royal Blue, Napier Green, Brewster Green, Maroon, Chalmers Blue and Slate Gray. All, except the slate gray, have black chasses. All lamps and hardware are enameled black. Doors are extra wide, and throughout every detail is characterized by excellence of finish and refinement of construction



Chalmers "Thirty-six" Berlin Limousine. $3 250.



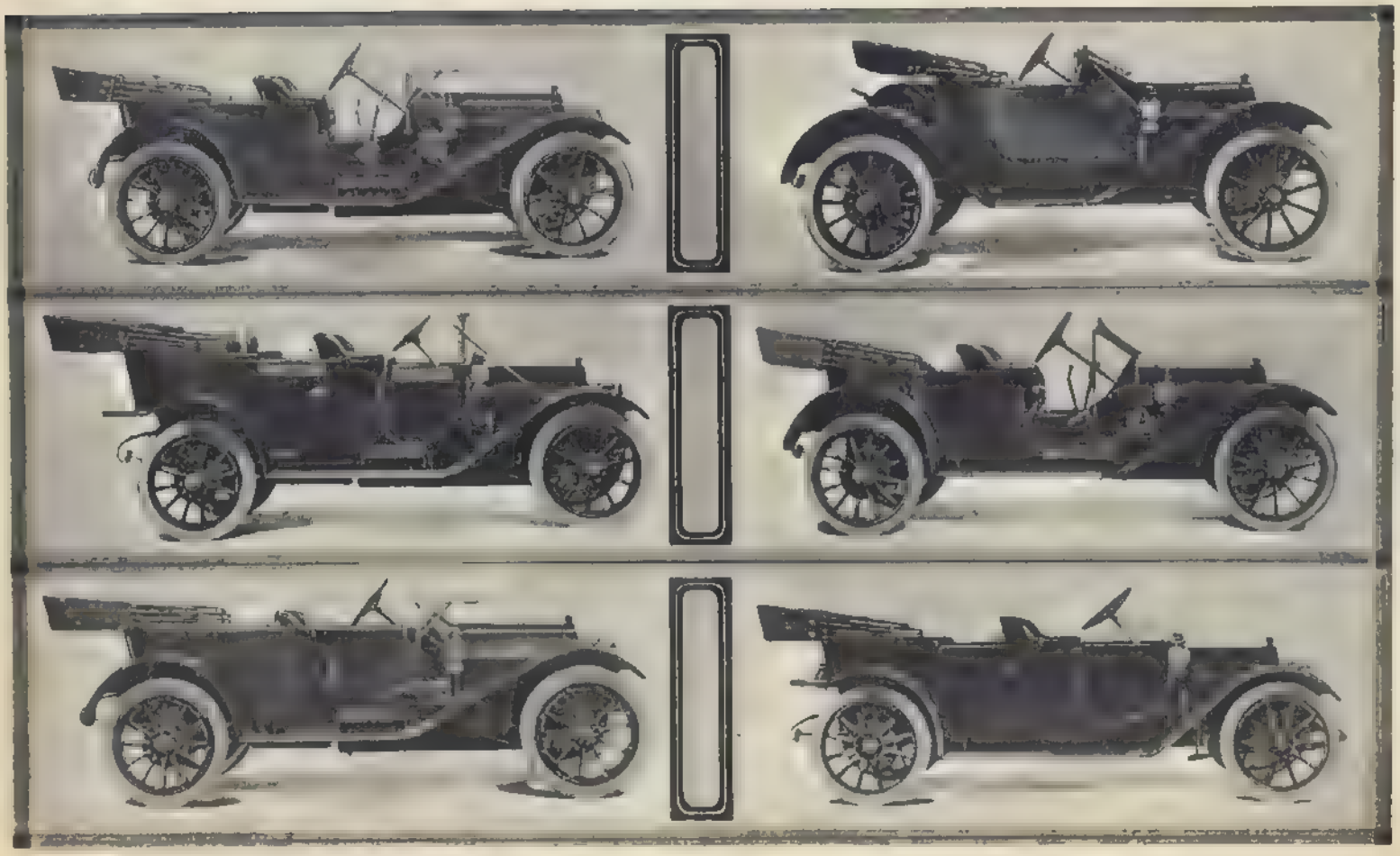
Chalmers Self-starter. A, check valve B, storage tank; C, dash push valve E, cylinder valves, F, shut off valve, G, pressure gage, H, valve for attaching tire inflater I, tire end of inflater

The "30" and "40."

The Chalmers "30" and "40," with which the public is already familiar, are continued with no radical changes except general refinements. In the continuance of these models the slogan of the Chalmers company seems to have been "Greater value for the price." More cars are quoted with full equipment this year, and taking that into consideration represent a substantial reduction in price.

The Chalmers "30" for 1912 appears in five body types—Foredoor Touring Car, Foredoor Pony Tonneau, Open Front Pony Tonneau, Torpedo Roadster and Inside Drive Coupe

All types are sold this year fully equipped and, except the Coupe, at the same price as the 1911 Touring Car without equipment



1911 Chalmers Models.

First Row, reading down—1. Detachable Part Tonneau $[illegible]
2. [illegible] Car $[illegible]
3. Torpedo Body $[illegible]

Second Row, reading down—1. Torpedo Roadster, $1500.
2. Open Front Part Tonneau, $1600
3. Touring Car, $1600

All "30" bodies, except the Open Front Pony Tonneau, are of the full foredoor type and, like the "36," all have forward compartments ventilated. The dual ignition system is used, while all of the features which have made the Chalmers "30" famous are retained.

The open front pony tonneau, one of the most popular type built by the Chalmers company, and practically unchanged as to line during the past two seasons, is retained for 1912.

The "30" Coupe gives ample room for three passengers. The Coupe and Torpedo Roadster chasses differ only from the regular "30" chassis in having 104-in. wheel base instead of 115 in. Both the Coupe and the Roadster carry large gasoline tanks on their rear decks.

The "30" is offered in the same wide variety of colors as the "36."

As in the case of the "30" the "40" for 1912 is sold fully equipped for the same price as the 1911 "40" without equipment. The "40" chassis has 122-in. wheel base and carries three body types—Fore door Touring Car of seven passenger capacity, Torpedo of four passenger capacity, and Detachable Pony Tonneau of four passenger capacity

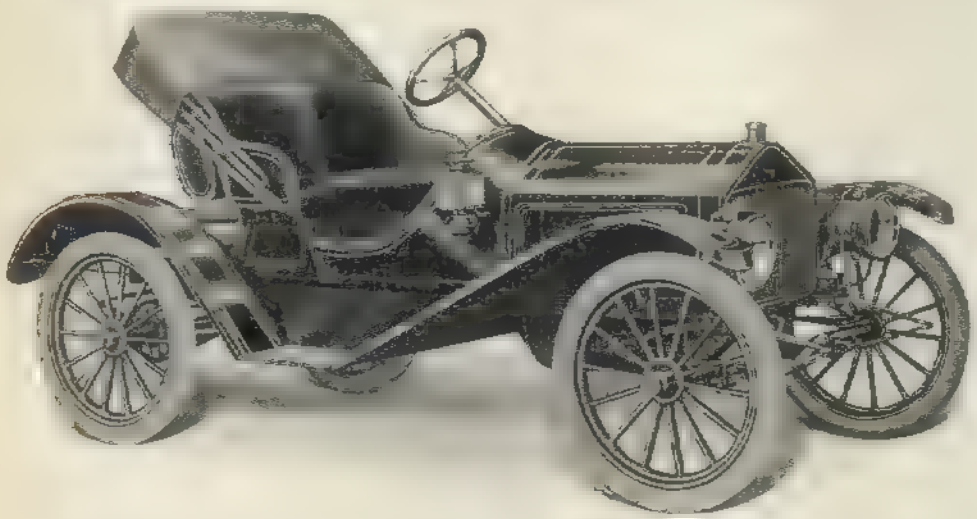
Detachable Pony Tonneau is readily convertible into a racy roadster.

Mechanically, the "40" is little changed from 1911. Many refinements, which result from constantly increasing manufacturing facilities, have been incorporated.

The 1912 Metz "Twenty-Two"

The Metz Company, of Waltham, Mass., is featuring for the season a runabout built upon the same general lines as last year's model, but with a four-cylinder, 22 h. p. water cooled motor. Simplicity is the keynote of the Metz construction, making for economy of construction and operation with light consumption of gasoline and lubricating oil. The light weight insures an excellent tire service, it being claimed that 10,000 miles can be covered on one set of tires. The high power, coupled with the light weight, makes this car an excellent hill climber, permitting steep grades to be negotiated on high gear.

The car sells for $600, with a full equipment, including high tension magneto, top, slip cover, gas lamps and generator, oil lamps, tail lamp, horn, tools, pump and a complete tire repair outfit



The 1912 Metz "Twenty-two", $600.

Motor, four cylinders, 3¾ x 4 in.; 22 h. p.; cooling by thermo-syphon system, high-tension magneto ignition, friction transmission, drive by double chains, wheel base 90 in., tread 48 or 56 in., interchangeable; price includes full equipment as shown

Motor.

The motor is of the four cylinder type, 3¾ x 4 in. cylinders cast en bloc, with removable water jacketed head. This construction permits free access to the combustion chamber, and is essentially simple, making for light weight, and satisfactory water jacketing, as well as accessibility. The cylinder head may be removed in a few minutes, and valves ground or cylinder cleaned of carbon deposit with ease

The water is circulated by means of the thermo syphon system, through water jackets of liberal size, and a vertical tube radiator liberal size cooling the water.

Lubrication is by the constant level splash system, the lower half of the crank case forming a reservoir from which the oil is splashed by the connecting rods. On each

Columbia Cars Will Have Knight Motor

Official announcement has been made that The Columbia Motor Car Company, Hartford, Conn., in addition to its regular poppet valve motor, will bring out a new high powered car employing the Knight sliding sleeve valve motor, as is being used successfully abroad by the English Daimler, Panhard, Mercedes, Minerva, Italian Daimler and Rover cars. Work upon this American production has been in progress for the past two years and is now offered in the new Columbia cars following a long period of trying out and experiment

Front view of the Columbia Mark 88.

The Columbia Knight motor is of the four cycle type with cylinders, cast in pairs, 4⅞ x 5½ in. The A. L. A. M. rating, similar to the British "Club" rating is 38 h. p. The power developed by the Knight motor, however, is said to be 70 h. p. without motor racing, while the maximum power realized approaches 85 h. p. While the motor follows the general lines of successful contemporaries abroad it is a Columbia production, being designed by Charles E. Reddig, chief engineer of The Columbia Motor Car Company, in consultation with C. Y. Knight, inventor of the motor and his engineering staff, while Mr. Knight himself has given the benefit of his experience in the preparation of the design

Cylinders have bolted on heads made gas tight, and the heads are depressed and contain the two spark plugs for the Bosch double system. Complete water jacketing encircles the cylinder and cylinder heads, the circulation areas enclosing the spark plugs and gas ways so that a uniform heat is maintained the length of the piston travel and above. The sleeves, of which there are two for each cylinder, are made of Swedish gray iron, and cylinders, sleeves, rings and pistons are all cast abroad and imported

The sleeves are reciprocated to perform the valve functions by connecting rods of short length attached to a miniature crank shaft which is driven from the main crank shaft at half speed by gear type or Coventry silent chain. There are no tappet or mush room valves, no cam shafts, nor cam rollers, push rods or train of driving enmeshed gears in front. It is claimed that the number of parts is thus reduced by one third.

Inside the cylinder wall is first an endless sleeve, which has openings on each side. These are in the form of wide slots and are located close to the top of the sleeves. Inside the first sleeve is the second sleeve, also endless, and having like slots on both the right and left sides. On the suction stroke of the motor the right hand slots of the first sleeve and the second sleeve come into juxtaposition one with the other, or register perfectly one over the other, exposing a large opening through both the outside sleeve and the inner sleeve so that fresh gas may enter, just as it enters through the aperture of the lift of a mush room type valve.

When the compression stroke is begun these sleeves slide, one up and one down, so that the slots are no longer coincident and are out of register; there now being no way for the fresh gas to escape. The compression of the charge is accomplished and the piston rising to the top of the cylinder, the spark is timed to occur and the explosion or power stroke takes place. The piston now being at the bottom of the firing stroke, the left hand slots of the sleeves come into juxtaposition or register, each with the other, leaving a large exit for the now spent gases to escape. The four cycles

Columbia Transmission, Mark 88

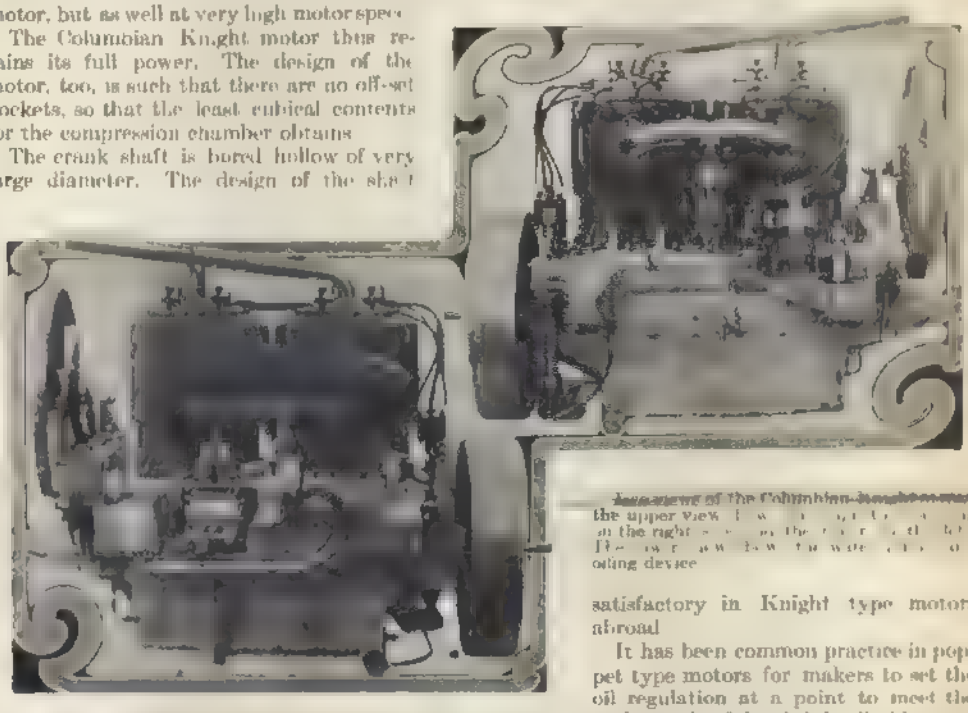
of operation are thus explained and the function of the sleeves described

The advantage claimed for this valve mechanism are first, the fact that the entrance and exit openings for the gases are twice the size of gas passages allowed in the most liberally designed "T-head" tappet type motors and nearly three times the size of gas passages in "L-type" or valve in head motors

There is a perfect timing of the valve openings and closings, not only at low speeds when there is ordinarily no difficulty in a cam roller following the cam in a tappet type motor, but as well at very high motor speed

The Columbian Knight motor thus retains its full power. The design of the motor, too, is such that there are no off-set pockets, so that the least cubical contents for the compression chamber obtains

The crank shaft is bored hollow of very large diameter. The design of the shaft



Two views of the Columbian Knight motor, the upper view showing the [illegible] on the right showing the [illegible] The lower view shows the water [illegible] oiling device

is such that lubricant travels to the bearings when caught. The valve shaft has throws for the sleeve actuating connecting rods, and is cut from the solid. The connecting rods are forged. Cylinders, sleeves and pistons are of imported cast iron machined and ground. The upper and lower crankcases are of cast aluminum, and the motor is supported by four legs.

The lubricating system is interesting since it marks the further development of what has come to be known in the trade press as "the Columbia movable dam" system Located transversely with the filtering screen of the lower crankcase are four troughs hinged on a buss shaft and connected to the throttle. With the opening and closing of the throttle these troughs are thus automatically raised or lowered.

When the throttle is opened and the troughs are raised the connecting rod scoops dip deep into the troughs, and the troughs contain a greater amount of oil before overflowing. When the work is light the closed throttle lowers the height of the troughs so that they overflow more quickly and the scoops dip but lightly into the troughs and a corresponding less amount of oil is splashed

The overflowing oil first falls to the screen and is drained to the oil reservoir below, to be again pumped by plunger pump into troughs, with a by-pass piping to a sight feed indicator upon the dash. The system is thus a combination of force fed oiling and splash, and this system has been wholly satisfactory in Knight type motors abroad

It has been common practice in poppet type motors for makers to set the oil regulation at a point to meet the most severe demands of hard hill climbing and continued high speed road work. Since cars are infrequently called upon to engage in the hardest work, a very great waste has been occasioned for much of the time a car is driven. The system just described for the Columbia Knight motor is unique in that it supplies just the proper quantities for the work the car is engaged in and does it automatically. The efficiency is difficult of appreciation, for tests of 750 miles of running for a single gallon of lubricating oil have been many, and even as high as 1,200 miles to a single gallon of lubricant has been attained. Certain it is that from two to three times the efficiency, at present realized in other type motors, will be generally obtained.

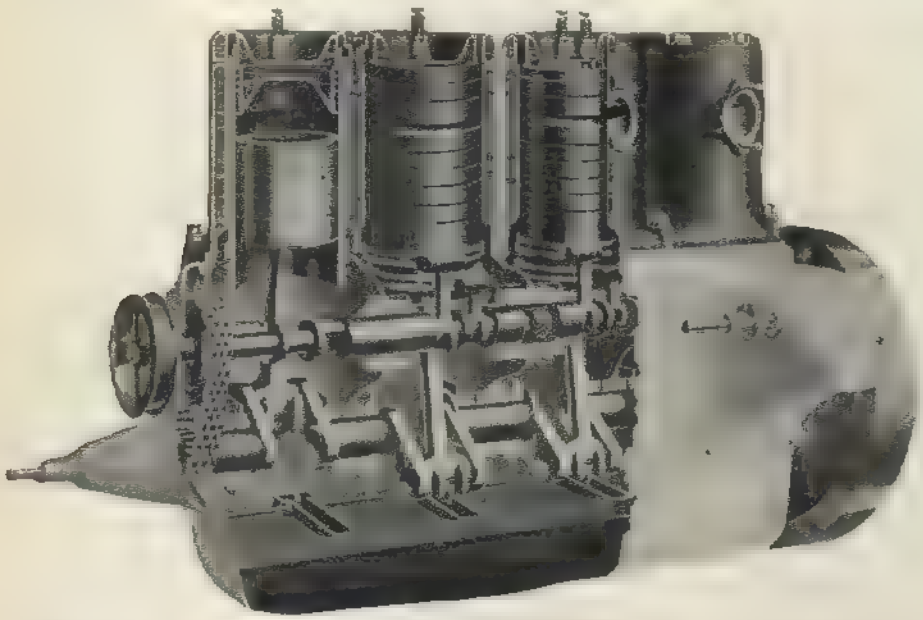
The amount of oil in the reservoir may be noted by a ball topped shaft, mounted upon a bob cork float set outside of the

crankcase and rising up to a conveniently noted position. The height of the oil can thus be determined at all times, in daylight and darkness. Into the supporting legs are set breathers for crankcase ventilation.

The magneto and pump drive is by means of silent chain to the flywheel end of the motor, while the valve shaft is chain driven from the forward end. The exhaust manifold has individual entranceways for each cylinder, while the inlet manifold has two main leads to each pair of cylinders, the cylinder port being two way branched internally to give gas entrance to each cylinder.

The ignition system is the Bosch double outfit with two sets of plugs, a pair of plugs being threaded into the head of each cylinder directly over the piston, the plugs being completely surrounded by the water jacketing.

The water passages are all large, the piping simple and of polished spun brass, while the radiator is of the cellular type with high peak and modish design. The clutch is of the leather faced cone type.



The Knight Motor of the Columbia Car.

Cylinders are 4⅞ x 5½ in.; Bosch dual ignition is used. Note the movable oil splash pans, connected with the throttle. The cylinder on the left is shown with the sleeves cut away. Note the shape of the cylinder head, and the rings around it, preventing escape of the gases between it and the sleeve. The sleeves are to be seen in the two inside cylinders.

Chassis Details.

The transmission is of the selective type, with four forward and reverse speeds, the control lever with the emergency brake lever being short levers mounted in the center of the body floor to be operated with the driver's left hand, leaving a free entrance into the front seats of the car from either side, or the control and emergency brake levers may be placed at the right side to be operated with the driver's right hand, and placed either inside the body or outside the body at the purchaser's option. The center control location, however, is recommended.

The front axle is of the "I" beam type, forged without welds. The pivots and steering connections are forged integral and of over large diameters. The steering gear is of the worm and sector type, with Timken conical roller bearings and convenient adjustments, and is mounted in an aluminum housing set on top of the side frame member.

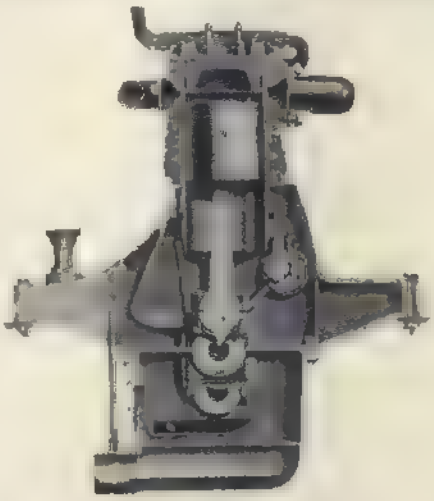
The rear axle is of the full floating type, the axle housing being a malleable casting with heavy gage tubes hot riveted, and without brazing, and further supported with an underslung truss rod. A large bolted-on cover allows of the quick removal of the main drive bevel and differential housing, the two being bolted together, and mounted in Timken conical bearings. The differential housing is drop forged. The pinion and pinion shaft are forged integral, mounted within a cage upon Timken short series bearings, and is bodily removable.

The torsion scheme is a triangular "U" section pressed steel member tied to top and bottom of axle housing case and leading forward to a flexible connection. The brakes are of large diameter and face, actuated by whiffletrees and rods to foot pedal and hand lever. The wheels are 36 in. diameter and the wheelbase is 129 in. All wheel hubs are

drop forged and the frame is narrowed in front and raised at the rear

Bodies.

The bodies are all flush sided and vestibuled with fore doors, while all the doors are full, proportioned, the wheel base allowing for full sized doors without lower rear corners being angularly cut. Each of the bodies is comfortable beyond any previous conception, except in some few custom made bodies. The seat cushions are ten in. high, with a smart pitch to the rear, made up of long coil springs and curled hair.



End Section of the Knight Motor.

This view will make even clearer the method of operation of the sleeves. The disposition of their ports is shown.

The seven passenger body is very large and commodious with straight severe lines, the top lines of the bonnet being continued in the top line of the flush side paneling. The front seats are wide and deep and the rear seat is 53 in. wide exclusive of the side upholstering. There is plenty of knee and leg room in both the front, extra and rear seats.

The six passenger body is also straight sided, without moulding decoration, the seats likewise being very comfortable, the rear seat for instance, being full 44 in. wide. The extra seats are particularly designed for six passenger body use, being collapsible and folding into the floor, being practically out of sight and wholly out of the way when not in use, yet immediately available. The body offers commodious seating for six passengers with a plenty of leg and knee room for all.

The close coupled roadster is a very smart job, carrying the extra tire upon the rear end with inclined back and trap door entrance to auxiliary storage space. The two passenger roadster is of the gun boat type, enclosing a large capacity gasoline tank and tourists' trunk out of the path of dust and dirt.

Equipment.

As much equipment as can be determined upon in advance, and certain of meeting universal approval, has been included in the purchase price. Cape tops and top boots are supplied for all cars, demountable quick detachable rims, with extra spare carried rim, power tire inflation pump, powerful electric lights, horn, ignition and lighting battery, Bosch high tension magneto, shock absorbers, robe rails, foot rests, rear hamper for storage, trunk rack, locker for goggles and gloves, muffler cut out, tool kit roll and full set regular and special tools, registration plate holders, etc.

The Parts of the Knight Motor.

Showing in the foreground the crank shaft, back of it the camshaft and piston. Note the cylinder heads and the two sleeves with their ports.

Coach Bodies.

With the great measure of power, flexibility and silence that is combined in the Columbia Knight motor this chassis is certain to be popular for coach cars. Columbia coach bodies will include seven passenger limousines vestibuled with fore doors and with glass enclosing side storm panels for the driver's seat, and Berline type double enclosed limousine, straight front and hooded landaulets, etc.

Columbia 38 h. p Car.

The Columbia works, too, is bringing out a new model for the 1912 season with poppet valve motor of the "T head" type. This new car continues the splendid Columbia of 1911 with important mechanical changes and new body installations

The motor has cylinders cast in pairs 4⅞ x 5½ in. and 38 h. p. A. L. A. M. rating. The new features include pure air pressure system for gasoline supply and raised carburetor; motor driven tire inflation pump, and a further refining of details.

The transmission is of the selective sliding gear type The front axle is of "I" beam section and the rear axle full floating without transverse strain

The bodies are new, being straight line seven passenger touring car, with inside operation of change gear and emergency brake levers; six passenger roadster, close coupled four passenger roadster and two passenger roadsters

Equipment includes top and top boot, shock absorbers, gas headlights, Prest-O-Lite tank, combination electric and oil side and tail lamps, horn, Bosch magneto and ignition battery, trunk, rack, foot rest, robe rail, tray for top side curtains, registration number brackets, regular and special tools, tire carriers, muffler cut out, etc.

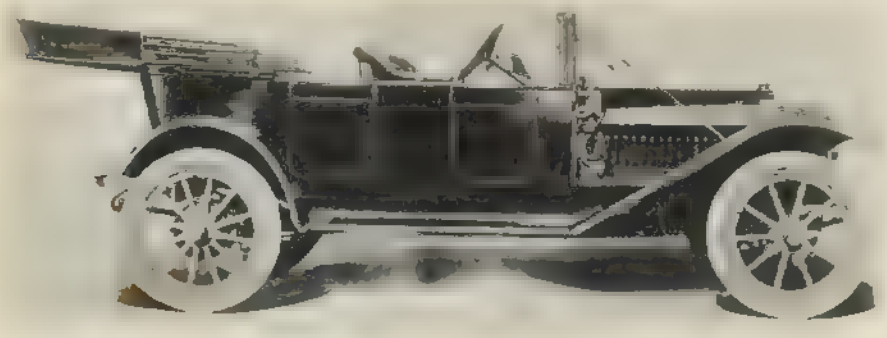
The Columbia Knight car will sell at $4,500 and the Columbia with poppet motor at $3,500. Complete equipment will be included as enumerated.

The 1912 Everitt Line

The Metzger Motor Car Company, of Detroit, Mich., the well-known manufacturer of the Everitt, has recently announced its 1912 models

William E Metzger, B. F. Everitt and William Kelly, the founders of this company, are among the oldest and best known of the industry's pioneers

During the last few years, a very strong tendency has set in toward the use of six cylinder cars, and it is said that 1912 will be the biggest six cylinder year ever known. The new Everitt Six is unusual in many details, of which one of the most striking is the use of the en bloc type cylinder casting in which the six cylinders, intake and ex



Everitt "Six" for 1912 with fore doors having inside handles and torpedo lines The valves are enclosed and a larger crankshaft is to be used The brake pulls have been simplified and the spring action developed The prices range from $1250 to $1850 according to horsepower

The 1912 Everitt line will include one six cylinder and two four-cylinder chasses on which will be mounted the most modern types of fore-doored touring and roadster bodies, rating at 48, 36 and 30 h. p. and selling, completely equipped, for $1850, $1500 and $1250 respectively. The mechanical and technical details of these cars have been brought to a point of unusual efficiency and desirability.

One of the most remarkable innovations in the new Everitt is the use of chrome-nickel steel throughout the entire car.

haust pipes and the upper half of the crank case are cast all in one piece, doing away with about two hundred extra parts and insuring a simplicity, rigidity and perfect alignment impossible to the old style construction. It is said that the en bloc type construction has been carried further in the new Everitt models than has ever before been attempted, and in fact, the company has recently been allowed broad patents covering this type of construction.

The new six cylinder Everitt has a wheel base of 126½ in., has large wheels and tires.

them all, but I would call attention to two classes of castings that are giving remarkable results. These are rolling mill pinions and gears and automobile castings. Rolling mill pinions have shown two to three times the life of carbon steel pinions and one and a half to two and a half times the life of nickel steel pinions.

While I would not want to recommend the replacement of drop forgings by any steel castings in the construction of an automobile, yet the record of vanadium steel castings in certain automobiles has been remarkable

Vanadium steel castings are made regularly by all the various steel making processes, and present no particular difficulty, the principal requirement being to have the steel clean and free from oxides, and the slag in proper condition in the case of open hearth steel. The cleansing of the steel from oxides by manganese and silicon is a well understood operation, and need not be gone into here in detail. The vanadium in the form of ferro-vanadium should be the last addition made, and a little time allowed after the addition of manganese and silicon for these elements to react

In the case of crucible steel castings the general practice is to add the ferro-vanadium to the crucible with the mix, and melt down. The amount of vanadium that has been found most satisfactory to add is .25 per cent., or 2½ lbs. to each 1000 lbs. of steel. The amount of vanadium remaining in the steel from this addition is usually .18 to .20 per cent. In the case of crucible and acid open hearth steel the scrap should be saved, as in remelting a considerable portion, about twenty to twenty-five per cent of the vanadium, is not lost, and advantage should be taken of this fact. Tests of the high silicon, high manganese ferro-vanadium (Masvan) already referred to, have demonstrated that it is more economical to use, as the silicon and manganese apparently exercise a sort of protecting influence and enable a larger amount of the vanadium to enter into the steel.

Vanadium in Bearing Metals.

This field of application for vanadium has recently been receiving considerable attention, and already some very interesting results have been obtained. One of the most notable of these has been the performance of a vanadium bronze bearing metal in a step bearing of a grinding machine. The load on the bearing of this machine ranges between 1000 and 1100 lbs. per sq. in., and the great difficulty heretofore has been to secure a metal that would stand up under this pressure, and give satisfactory results with regard to wear and friction. A number of bearing metals of high reputation have been tried out under this machine and some of them have only lasted fifteen to sixteen hours. The vanadium bronze bearing metal tested out was based on the standard P. R. R. car box bronze mixture, with the addition of about 05 per cent vanadium. Bearings from this mixture have been in service for a year with entire satisfaction. The amount of wear on these bearings has been very small, and as a matter of fact the operators of the machines have been unwilling to have the bearings taken out for measurement, as they are entirely satisfied with their performance.

As a result of the very satisfactory performance of these bearings, the mechanical department of this same works has recently started tests of standard babbitt metal with the addition of a small quantity of vanadium

1912 BORLAND ELECTRICS

The Ideal Electric Vehicle Company, of Chicago, Ill., is offering the Borland Electric Brougham in revised form for the season of 1912. The body is large and comfortable and will accommodate four persons without crowding. The car is hung low, making a low centre of gravity and precluding the probability of overturning. The price is $2200 with a guarantee.

The steering gear is of the lever type. The battery consists of forty cells of Exide or other makes if desired. The motor is a

The "Borland" Electric

Westinghouse, which is especially designed for speed and power. A Westinghouse controller of the drum type furnishes the speeds forward and reverse.

The springs are semi-elliptic in front and full elliptic in rear. The fenders are metal without joints. The wheel base is 92 in. and the tread 56 in. standard. The bearings are of imported annular type throughout. The wheels are equipped with Motz cushion tires.

Two brakes are provided, one a ratchet motor brake and the other a large expanding enclosed rear hub member. The speed capacity is from 4 to 20 m. p. h., and the mileage on one change is 75. The weight is 3000 lbs

MAKING ACETYLENE BURNERS

The following description and illustrations are of the Crescent Burner Manufacturing Company, of New York City.

The raw material, commonly known as lava, is mined in Bavaria. This is really silicate of magnesia or limestone, the equal of which has not yet been found for gas burners. The material is cut into blocks suited for the various types of burners, and then enters the milling room, shown in Fig 1. In this room the various burners are shaped and undergo, according to the pattern, from three to five different manipulations

Fig 1. Crescent Burner Manufacturing Company. Milling room where burners are cut to shape.

From the shaping and milling room, the burners enter the drilling room (Fig. 2) Here the burner, after being shaped, is brought, in order to receive the various gas and air channels and outlets. Here again from three to five different drillings are administered to this burner, and if it is mentioned that the drilling of a ½ ft. burner requires a drill of less than one one-hundredth of an inch, the reader will get an idea as to the intricacies of this work. A deviation of one one-thousandth of an inch in the angle of the impinging jets is enough to put the burner out of commission.

From here the burners are taken for the first time into the testing room (Fig. 3). Here every burner is thoroughly tested, and where it is possible, adjusted. From this room the burners are taken to the furnace, and subjected to a gradual heat of approximately 2000 degrees F., after which process the burners are again returned to the testing room, and again examined as to the proper alignment and accuracy

The burners which pass the inspection in the testing room enter the mounting room, where they are mounted in pillars. From there they wander back into the testing room, and are for the last time examined and tested, in order to ascertain whether there is a leak, or any other defect, either in the pillar or tip. From there they are returned to the packing and boxing room and shipped to the trade

The loss of material in reducing the lava to blocks serviceable for the manufacturing of burners is about 70 per cent. The loss in shaping the blocks into the outlines of a burner is 85 per cent. of the material.

Fig. 3. Crescent Burner Manufacturing Company. Testing room where burners are tested before baking, after baking and after mounting on pillars.

Fig 2. Crescent Burner Manufacturing Company. Drilling room where gas passages are drilled in the lava tips.

The loss in baking is according to the run of the material, from 30 per cent. to 50 per cent. (at times even 80 per cent.), and in mounting and final selecting there is another loss of at least 10 per cent. In other words, out of 100 lbs. of stone, about 2.4 lbs. of burners can be made. This waste or loss strikes the manufacturer more severely than any other, as these goods represent, outside of the material, also the labor and all other expenses connected with the manufacture. The German stone, in blocks, costs approximately 15 cents per lb.

The Kinsey Manufacturing Company, of Toledo, O., manufacturer of automobile parts, is erecting a large addition to its new factory.

1912 Thomas Models

For 1912 the E. R. Thomas Motor Car Company, of Buffalo, N. Y., offers four new and distinctive types of open fore door bodies. The seven passenger touring car and five passenger phaeton are built on a chassis with a wheel base of 134 in. The graceful appearance. All of the spring bolts and shackles have been equipped with automatic compression cups, front and rear. The starting crank bracket has been changed to hold the crank in an upright position when not in service. The front axle is of

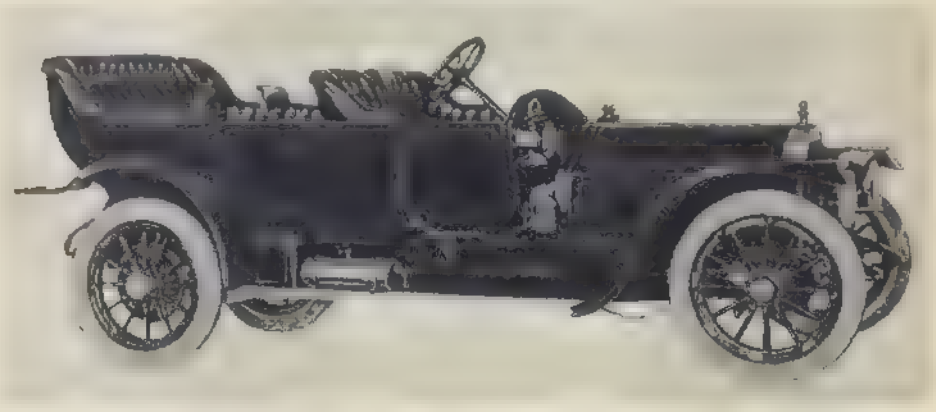


Fig. 1. Seven passenger Thomas, 1912 Model. Both the five and seven-passenger are the same price, viz. $4[illegible]. The wheel base is 134 in. The same chassis, but with a frame measuring 126 in., is used for the four passenger surrey and the runabout.

same chassis, but with a frame measuring 126 in., is used for the four passenger surrey and the two passenger runabout. 1912 cars are designated as the Thomas Six Forty Model M. C.

In line with the Thomas policy of specializing on but one type of car, the factory production will be devoted exclusively to six cylinders. While no radical changes have been made in the 1911 Thomas Six Forty, Model M. C. chassis, some decided refinements have been accomplished.

1912 Improvements.

Beginning at the front of the chassis, the frame horns have been raised to give a more very heavy section, and is now made entirely of nickel steel. The steering bolts are topped by a Timken roller bearing and the wheel spindles are of unusually large diameter. A straight steering cross rod is used. The front axle is hung on the spring 1 in forward of center; thus tilting the steering bolt backward and giving the car a tendency to run straight and thereby producing easy steering.

Radiator and Fan.

The radiator filler cap is a ball with the word "Thomas" engraved upon it. The radiator cap is hinged and is opened by lifting the ball. When the ball is seated, three

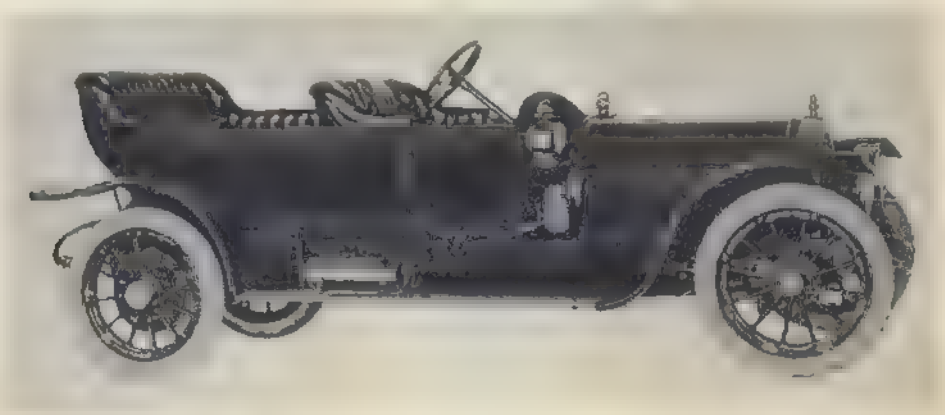


Fig. 2. Five-passenger Thomas Touring Car. This has the same chassis as that of the seven-passenger, the only difference being in the bodies. The cowls on the front are equipped with ventilators which may be opened or closed at will.

plungers inside the cap lock it in place. The radiator is equipped with a spreader to distribute the returning water upon the tubes

The fan is of new design and the fan belt is held tight by spring tension. When necessary a new belt can be quickly substituted

Motor.

The motor is a six cylinder, 4¼ x 5½ in. The cylinders are cast in pairs, of "T" head type.

The oiling system is of the circulating type. The pump is of the eccentric type and is embodied in a brass plate, which is held to the bottom of the motor base by cap screws. This pump is driven by vertical shaft and spiral gears on the cam shaft.

each other, even including the switches on the switchboard.

Clutch and Transmission.

The Thomas clutch is still used, as it has given satisfaction everywhere. This is of a single disc type. The disc is made of brass and equipped with cork inserts.

The cross type of universal joint is used between the clutch and transmission, and the entire mechanism is covered by an aluminum shield which is held by clamps and thumb screws. This shaft not only assures the retention of grease around the universal joint, but catches any oil which might be thrown out from the transmission front bearings.

Fig. 3. Right side view of Thomas chassis, showing six-cylinder motor of 40 h. p. Note the curve to frame, giving great strength. This cut also shows very clearly the spring suspension

Try cocks are used on the side of the motor base, one of which is stamped "full and the other, "safety." If oil flows out of the safety cock, there is sufficient reserve for 30 to 50 miles. Handles rise from these cocks to a convenient position on the side of the motor.

The level is maintained in the crank case proper by means of dams and overflows to the reservoir beneath. A pipe from the oil pump leads to the switch board and flows through a sight feed; the waste pipe from this leading back to the motor. Oil flowing through this sight feed is evidence that the pump is working

The car is equipped with Miller carburetor and the gas passes to the motor through a three finger "Y" manifold, giving a specially clear passage to each block of cylinders and the angles are such that gasoline cannot accumulate in the pipe from condensation

Ignition.

Two independent systems of ignition are used, one battery system composed of commutator-distributor, with a single vibrating coil, and the other system is standard Bosch high tension.

Two sets of spark plugs are used and the two systems are absolutely independent of

The transmission is a selective type, three speeds forward and reverse; both shafts being carried on imported ball bearings and a ball bearing thrust is used in addition to take the thrust of the clutch. The transmission is supported by cross members of the frame. Spicer joints connect the transmission and rear axle on each end of the propelier shaft.

Steering Gear.

The Thomas steering gear is still used except that the steering wheel spider has been changed by carrying out the wood rim along the spokes for about 3 in. for the comfort of the hands, and the spokes are set to form a vertical cross when steering straight ahead, the upper spoke in this position being the only one not covered with wood, being reserved for Klaxon horn button.

Axles, Brakes and Springs.

The pinion shaft of the rear axle is now placed in a horizontal position, giving both the universal joints the same angularity.

The torque of the rear axle is taken up by the torque tubes supported by housing at the front end, and this is maintained by spring tension in this housing.

These tubes are Shelby tubing with ⅛ in. wall.

The rear axle is loose in the spring pad and drive is taken through the rear spring

The rear axle is extremely heavy and equipped with nickel steel sleeves on which the wheel bearings are placed. The bearings on the rear axle are Timken rollers.

The brake drums are 17 in. diameter and 2½ in. face, giving 525 square in. of braking surface, both brakes being on the rear wheels. The axle is full floating type.

Rear springs are three-quarters elliptic, the upper portion being supported in a housing which is a part of the frame which is a Thomas patent

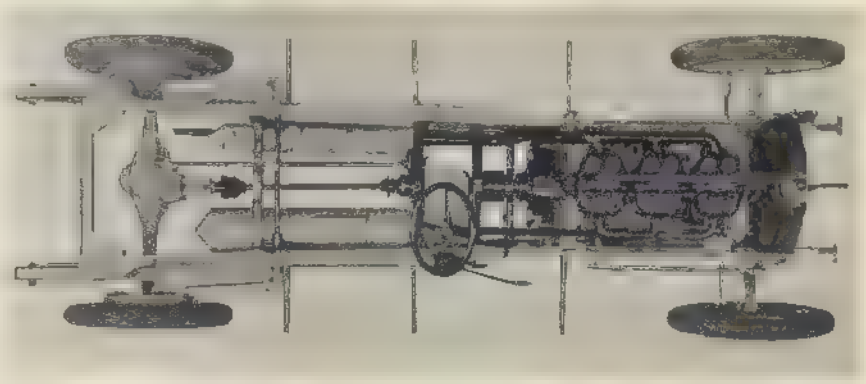


Fig 4. Top view of Thomas chassis, showing fuel tanks feed being by air pressure. The transmission gear set is located just aft of the clutch, the propeller shaft being universal jointed

Oil and Gasoline Tanks.

Slung from the cross members of the frame, one on each side of the propeller shaft, there are two tanks. The one on the right side is a pressed steel tank containing 24 gallons of gasoline, on the left side is an oil tank, similar in style, containing 6 gallons of reserve lubricating oil, a continuation of the brackets of the oil tank supporting the muffler also. These two tanks are an innovation which not only give large capacity for gasoline, but a large reserve supply of oil as well, and at the same time produces a low center of gravity in the chassis, and this, together with the position of the front axle, causes the car to cling to the road, especially noticeable when the tanks are entirely full.

Each of these tanks is equipped with an air dome which is another departure from the present practice These air domes do not fill with gasoline or oil when the tank is fully charged, and as a result there is quite a volume of compressed air on hand when the tanks are entirely full.

Other Details.

The body equipment embraces new features in the style of cowl, and in addition, the equipment of this cowl with a switch board, extending across the entire front, which switch board is within easy reach of the driver while seated behind the steering wheel.

On the right hand side of this switch board are located the battery and magneto switches, the air pressure gage for gasoline tank, the hand pump for air pressure to gasoline tank, the hand pump for air pressure to oil tank, air pressure gage for oil tank and oil sight feed. The last shows a stream of oil in view when the motor is running. The pressure to gasoline tank is taken care of by a mechanical air pump contained in the motor assembly; the hand pump being used only when the car has been idle for a sufficient length of time for the pressure to go down, or in case of emergency.

The supply of the air pressure to the oil tank is by means of the hand pump only. When it is required to supply the motor with oil, pressure is pumped up by hand and then the valve is opened in the line to the motor base, the operator in the meantime watching his try cocks. The valve in oil line is to be closed when the motor base has been filled

The running board brackets are pressed steel and splashers are so arranged that water will drain out beneath the running boards during a storm when in service, or when car is being washed.

The compartment under the front seat is occupied by a 10 gallon reserve tank of gasoline with gravity feed to carburetor.

Across the back of this front seat compartment and extending the full width of the car is a compartment for side curtains This is accessible from the tonneau. The curtains are carried in a roll, thus obviating the necessity of folding the celluloid windows. The compartment under the rear seat is for miscellaneous storage. The bodies are also equipped with rear tool boxes suspended between the rear springs

for the storage of tire pump, jack, etc., as heretofore.

The cowls on the front of each body are equipped with ventilators which may be opened or closed at will

The hub caps on all wheels carry the symbolic design of the world with the word Thomas engraved upon it, the same as the radiator filler cap.

The bodies are made of aluminum with wood sills and frames.

Hupp-Yeats Electrics

The Hupp Corporation, of Detroit, Mich., is placing on the market for the season of 1912 three new models, and have improved Model 1-A in many respects.

Model 1-A.

Model 1-A has an 86 in. wheel base The interior is trimmed with gun metal hand buffed dark blue leather. The tires are Goodyear Long Distance No-Rim-cut, 32 x 3½ in. The battery consists of 27 cells of 11 plate Exide Hycap With standard equipment the price is $1750

The upper picture shows the Hupp-Yeats Electric Model 1-B with standard equipment, 30 cell 13-plate Exide Hycap, $2150. The lower photo shows the Model 2-A Torpedo. The interior is trimmed with hand buffed pebble grain leather. The price is $1650.

Model 2-A.

Model 2-A Torpedo is the same as Model 1-A except that the interior trimming is hand buffed pebble grain leather. A mohair top and glass windshield are provided. With standard equipment, the price is $1650.

Model 1-B.

Model 1-B Coupe has a 100 in. wheel base and the equipment is the same as Model 1-A except that the battery is a 30 cell, 13 plate unit with a mileage capacity of 110 to 125 on a single charge. With standard equipment, the price is $2150.

Model 2-B.

Model 2-B Torpedo is the same as Model 2-A except that the battery equipment is 30 cells of 13 plate Exide Hycap.

Special Equipment.

Motz cushion tires will be provided on Models 1-A and 2-A for $50 additional, and on Models 1-B and 2-B for $100 additional. Ironclad batteries are from $120 to $170 extra, depending on the model.

The Stewart & Clark Manufacturing Company is opening two additional branch offices, one in Kansas City, at 1825 Grand Avenue, under the direction of Harry E Weber, who has been traveling that territory. The other branch will be at Indianapolis, 514 North Capitol Avenue, under the management of L. L. Banford, who has covered that territory for the Stewart & Clark Manufacturing Company for several years.

The Buckeye Rubber Company, of Akron, O., is erecting two new fireproof buildings at its plant in East Akron The additions will cost about $60,000

1912 White Models

The White Company, of Cleveland, O., announces for the season of 1912 a new six-cylinder model which has all of the characteristics of White construction as offered heretofore.

All White cars are of the long-stroke type, cylinders cast en bloc, the only thing distinguishing the "thirty" from the "forty" being a matter of size. And now, like some of the best known foreign cars, their "60" has its six cylinders cast en bloc and has all the simplicity and ease of operation which has marked the other White Models.

Almost any standard type of body can be fitted to any of the four chasses at prices ranging from $3200 to $6500

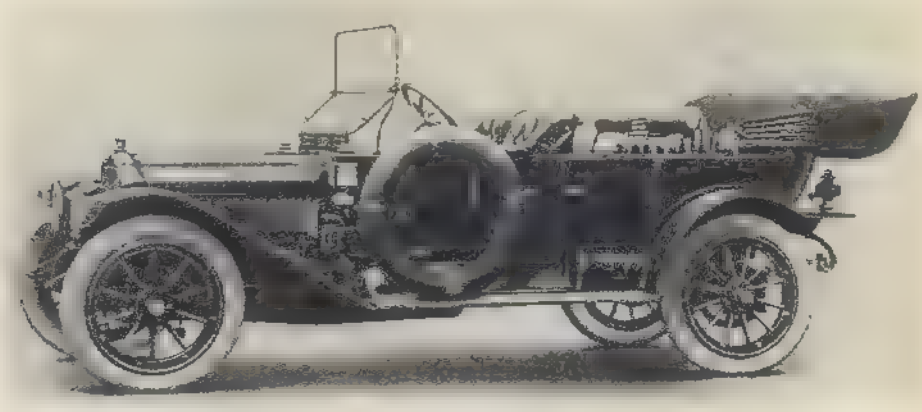


Fig. 1. White six-cylinder, seven-passenger touring car with fore-doors. The price is $5,000. The cylinders are cast en bloc, with intake, exhaust and water manifolds cast integrally. The transmission gear set has provision for four speeds forward and one reverse.

Since the same features and the same general design is found in all White cars, whatever the power, one description of the White construction will suffice

Motor.

The four or six cylinders are cast en bloc with intake, exhaust and water manifolds cast integrally. The throttle and spark advance are controlled by levers mounted on steering wheel. The throttle is also operated by an accelerator-pedal.

The valves are mechanically operated and interchangeable. Inlet and exhaust valves are on the same side of cylinders. Each valve with its valve-stem is a one-piece forging made of special nickel steel of such a nature as to prevent distortion by heat. The valve lifters have fibre seats, thus reducing noise to a minimum and preventing the ingress of grit and sand. The cam shaft is entirely enclosed within the crank case. Valve springs and stems are set in a valve chamber located in the cylinder casting, protected by a detachable plate.

The crank case is made in two sections of special aluminum alloy. The upper section carries all the working parts of the motor. It is hung by three-point suspension on the main frame. The lower section is simply an oil well and is easily removable for inspection or adjustment of connecting rods, cam shaft, etc., without disturbing the crank shaft bearings

The crank shaft is forged of chrome nickel steel. It is of heavy construction and has but two main bearings which are ball type of large diameter.

Lubrication.

Lubrication is a combination of the splash system with positive feed. There is a direct feed to each of the two main crank shaft bearings. Each connecting-rod bearing is also positively lubricated by means of oil-ways which are cut through and carried on the crank shaft. These oil-ways are supplied centrifugally through oiling grooves on the crank shaft. Special provision is also made to insure an abundance of lubrication for the cam shaft bearings, and for the gears driving the cam shaft, the water pump and the magneto.

There is an oil level valve through which excess oil may be drained. The oil reservoir containing a supply of fresh oil is cast as an integral part of the aluminum crank case and is located at the rear of the left side of the motor. In this reservoir is an oil pump which is driven by a gear on the cam shaft. The oil passes from the pump to the motor by way of an adjustable sight feed on the dasn

Motor Cooling and Ignition.

Positive water circulation by gear-driven centrifugal pump. A honeycomb radiator cools the water. The radiator is so supported that it does not receive the strains to which the frame may be subjected on

rough roads. The water jacket of the motor is generous in size and the radiator is so efficient that it is a practical impossibility for the motor to become overheated. Belt-driven fan located directly back of radiator. Spokes in fly wheel cast in form of fan to create draft under bonnet.

Ignition is by means of a high tension magneto.

Carburetor.

The carburetor is of White design, water jacketed, aspirating type. An air valve graduated to supply correct mixture at all motor speeds is provided.

Compression Relief.

To facilitate starting the motor and to prevent back kicking, the compression is relieved by means of a small lever. This lever shifts the cam shaft endwise, which results in raising the exhaust valves and thus relieving the compression

Transmission and Clutch.

Four forward speeds with a direct drive on the third speed and a reverse. The transmission is of the selective type; that is, it is possible to shift from one gear to any other without engaging any intermediate gear The gear-shifting mechanism is enclosed within a gear case which also forms an oil well. A cover plate, held in place by wing nuts, may be easily removed giving access to all parts of the gear case. The gears are made of heat-treated steel. The gear case is located immediately behind the clutch and is supported on cross-members of the frame by three point suspension. The connection between the clutch and the gear case is such as to allow for any slight variation in alignment which may occur when the car is traveling over very rough roads. All gear shafts have ball bearings. A leather-faced cone clutch is used

Other Details.

The steering gear is of worm and sector type with ball thrust bearings.

There are two brakes on each rear wheel, acting on wide drums of large diameter The brakes operated by the pedal are fibre-lined, external contracting brakes. Those operated by the hand lever are internal, expanding, metal-to-metal brakes

A shaft-drive connects the gear case to the rear axle. This shaft is fitted with two universal joints, one of which is a telescope joint

The frame is pressed chrome-nickel-steel, heat-treated

The front springs are semi-elliptic; rear three-quarters elliptic; Vanadium steel

The front axle is a one-piece drop forged "I" beam section made from 40 carbon steel, heat-treated. A ball thrust is interposed between steering arm and the axle.

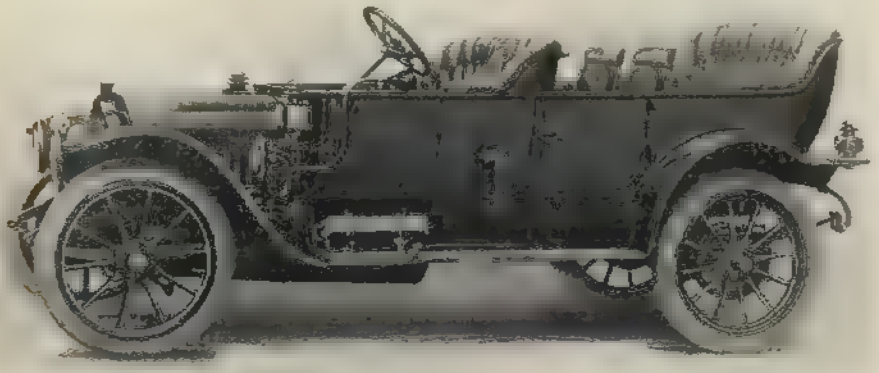


Fig 2. White four-cylinder, seven-passenger fore-door torpedo body. The details of this car are the same as for the "Six," except in the number of cylinders and horsepower. The price is $3,500

The rear axle has three members—gear case, right and left axle sleeves, supported by a heavy truss from ends of axle sleeves under gear case. All gears are accessible through large cover on top of housing. Axle shafts are of chrome-nickel-steel. The brake band supporting arms are integral with axle housing. Gears are removable without splitting the gear case.

The wheels are of large diameter, have heavy hubs and spokes and are mounted on annular ball bearings.

Equipment.

The equipment consists of two acetylene headlights, generator or Prest-O-Lite tank with cover, oil side and tail lamps, horn, tool kit with box and tire holders.

WHITE STEAM CARS FOR 1912

For 1912 The White Company, of Cleveland, O., offers the same line of cars as that offered for the season of 1911. Two chasses are made, the 20 and 40 h. p., and a number of standard bodies to fit either chassis.

Winton Six for 1912

The Winton Six built by The Winton Motor Carriage Company of Cleveland, Ohio, is with few exceptions the same 48 h. p. car as that offered in former seasons. With its wheel base lengthened to 130 in., the 1912 Six carries an enlarged and spacious body, having generous doors, front and rear, and luxuriously comfortable cushions and upholstery

Electric side and tail lights, the former imbedded in the dash, together with ventilators are new features of the regular equipment. Lighting current is supplied by a six volt sixty ampere-hour storage battery.

Gas headlights are continued. The gas tank being boxed on the left running board

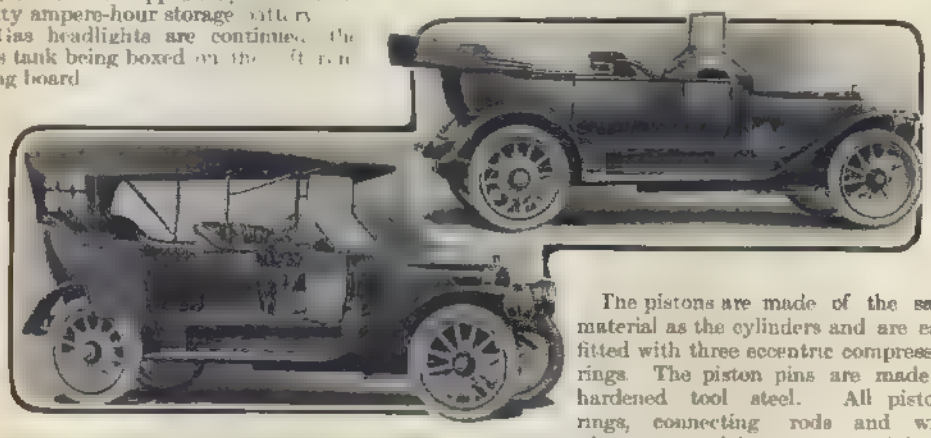


Fig. 1. 1912 Winton Six with fore-doors. This is the same 48 h. p. car which has been produced continuously since 1907 with no radical change. The wheel base has been lengthened to 130 in. The Winton Six continues to have a self-cranking attachment which is operated by air pressure produced by the motor

Practically the only other changes affecting the chassis are the adoption of adjustable pedals, cross-type front universal joint, and the lengthening of the flexible coupling between the motor and the clutch

Motor.

The motor is of the six-cylinder type with a bore of 4½ in. and stroke of 5 in. developing 48.6 h. p. A. L. A. M. rating. The motor is suspended in a low position and all moving parts are enclosed except the fly wheel. The cylinders are cast in pairs with water jacket surrounding each individual cylinder. There are six priming cups. The cylinders are made of tough close-grained iron, ground to a mirror finish, assuming long life and reducing wear. The cylinders are offset from the crank shaft, securing from the motor its maximum efficiency and reducing wear and knock to a minimum.

The pistons are made of the same material as the cylinders and are each fitted with three eccentric compression rings. The piston pins are made of hardened tool steel. All pistons, rings, connecting rods and wrist pins are the same weight per set, giving a perfect balance.

The valves are of liberal size, are interchangeable and mechanically operated. They are all on one side, avoiding the use of two cam shafts and of exposed working parts

Lubrication.

A pump operated by an eccentric on the rear end of the crank shaft takes oil from the oil tank at the left side of motor and delivers it through leaders to the crank shaft main bearings and the front gears. A second pump, operated by the same eccentric, draws oil from the crank case (where it is deposited by gravity), and returns it to the

Fig. 2 Side view of chassis, showing large sod pan fuel tank in rear and upsweep of frame over rear axle.

The members of the Fifth International Congress for Mining and Metallurgy, held this summer at Dusseldorf, were invited to visit the works of the Stahlwerke Rich. Lindenberg, Aktien Gesellschaft, at Remscheid-Hasten, and every opportunity was given the visitors to make themselves fully familiar with the manufacture of steel as there carried out. The entire absence of secrecy was a most convincing demonstration of the industrial strength which comes from being first in the field, and keeping ahead of competitors, not by secrecy, but by sheer force of superior enterprise and workmanship Nine times out of ten industrial secrecy is an index of industrial weakness; the really strong have no need to shut themselves up in industrial fortresses, but can act large-mindedly, conscious of their innate strength

Space does not permit us here to give a full description of the electric steel mill and its accomplishments. A few figures may suffice to show to what degree the automobile industry is likely to be affected by electro steel.

Lindenberg Electro Nickel Chrome Steel			
C. N. S. 1 (annealed)	C. N. S. 2 (annealed)	C. or K. (annealed)	
258,000	185,000	142 200	Tensile Strength in lbs. per sq. in.
220 000	180,000	100 000	Elastic Limit in lbs. per sq. in.
8 per ct.	12 per ct.	18 per ct.	Elongation in 2 in
30 per ct	40 per ct.	60 per ct.	Contraction
15 and lower	15 and lower	40 to 50	Carbon
40 and lower	.40 and lower	.50 to .60	Manganese
.30 and lower	30 and lower	10 to 25	Silicon
015 and lower	015 and lower	015	and lower Phosphorus
015 and lower	015 and lower	015	and lower Sulphur
6 00	4 50	3 50	Nickel
1 00	2 00	80	Chromium

By properly heat-treating such materials physical values are obtained like:

C. N. S. 2 (hardened).
285,000 tensile strength.
280 000 elastic limit
6 per cent. elongation in 2 in
30 per cent contraction

In a like manner electro chrome tool steel in bars or tubings for the manufacture of balls, ball-bearing raceways, bushings, washers, wrist pins, etc., will be of great benefit in raising the standard of quality in the making of motor-car parts. Last, not least, electro steel for magnets possessing a superior coercive ability and permanency, will no doubt soon be found in American automobiles. Regarding magnets made of electro magnet steel, a German paper "Deutsche Industrie—Deutsche Kultur," Vol. VI., No 7, writes: "Cast in the sun heat of the electric arc; pressed into shape by electric rolls; given their magnetism by the electric current, they are pure children of the electric force, and all their life possess electromagnetic strength. So do they through all the wide, wide world, spread broad the fame of Goddess Electra."

THE QUESTION OF LONG VERSUS SHORT-STROKE GASOLINE ENGINES

By Justus B. Entz

In considering the relation of bore to stroke in an automobile gas engine we may assume that at 1,000 revolutions per minute the power obtained will be proportional to the piston displacement, and that a 4½ x 4¼ in. and a 4 x 5¾ in. will give equal power. If each engine is designed for the same percentage of compression space, and has valves proportional in size to the bore, we find that the shorter stroke engine has a total pressure on its piston head of 5¾ ÷ 4½, or 26 per cent. more than the longer stroke engine, and that as the crankshaft and connecting rod bearings turn but once in their boxes per revolution, whether the stroke be long or short, that the loss in them is increased.

The side pressure of the piston on the cylinder walls is also greater in the same proportion, but as the piston speed is correspondingly less, this loss will be about the same in each. But the result is a higher mechanical efficiency for the long stroke The piston in the long stroke is lighter, being less in head and wall, but the speed being higher the balance of the two engines at the same revolutions per minute will probably not differ much

The wall area of the compression space is less in the long stroke, and its thermal efficiency is higher therefore, as well as its mechanical efficiency. The torque of the long stroke is higher at low speeds due to its higher thermal efficiency, which is lowest at low speeds.

At high speeds, however, as the same volume must be drawn through smaller valves, the long stroke will have a less volumetric efficiency, if the valves are small enough to be the limiting factor, and therefore will lose power at high speeds. But in practice even in engines of 40 per cent. longer stroke than bore, the carburetor generally determines the volumetric efficiency rather than the valves.

It is, of course, a question as to how much the stroke can be increased as compared with the bore and give better results, but I believe that engines with a stroke relation to bore of from 1.4 to 1.5 are lighter, more efficient, and more flexible than shorter stroke engines.

Outline from Summer meeting of the Society of Automobile Engineers, at Dayton, Ohio, June 15 to 17, 1911.

Colby Underslung "30," Model L

The Colby Motor Company, located at Mason City, Iowa, presents for the season of 1912 a new and interesting model ycleptt Model L This is a "thirty" and sells for the sum of $1250, being in the medium-price class. The design of the body follows closely on the torpedo or lattlesbys style. The forward wind guards are long and rakish, giving a dash to the thing, and all finishings are of first-class workmanship. One noticeable feature is the door construction. The handles are concealed and a bead or moulding follows the line of the door, eliminating the "flat" effect on the side of the car

Motor.

The Model L is equipped with a four-cylinder vertical water-cooled motor with A. L. A. M. rating of 25.6 h. p., having a bore and stroke of 4 in. x 4½ in., but which will develop 32.4 h. p. on the brake. The cylinders are cast en bloc with enclosed valves, and intake manifold cast integral with the cylinders, making a very compact and dust proof motor. The cylinders are the highest quality gray iron, accurately machined and ground to size. The pistons and rings are also made from special gray iron, annealed and ground to exact dimensions. Each piston carries four compression rings above the wrist pin and has three oil grooves below.

Lubrication.

The motor is lubricated by a self-contained positive plunger pump with sight feed on the dash which insures perfect lubrication at all times, while the supply in the crank case is indicated by a protected glass oil gage in the side of the crank case and also by the usual method of placing pet cocks at the desired level.

Ignition.

The Colby Model L is equipped with Splitdorf dual system with magneto as primary source of current and batteries acting through single non-vibrating coil on the dash as secondary for starting. The spark plugs are located over the intake valves while the priming cups are located in the other side of the cylinder. The cables are supported above the cylinders with fibre clamps.

Cooling.

The motor is water cooled, the jackets being cast integral with the cylinders, with water-jacket cover amply large to clean out all scale and deposits. The circulation is by centrifugal pump located on the left side of the motor. The radiator is square tubular and of large size which allows of slow hard work without heating.

Fig. 1. Colby Four Passenger, fore door touring car. The chassis is underslung, making a low hung car of good appearance. The chassis can also be had with a two passenger roadster with fore doors.

Carburetion.

A Rayfield float feed automatic carburetor is used on Colby Model L, being mounted on the right side of the motor. This carburetor has the quick adjusting dash extension. An 18 gal. tank under the front seat supplies the fuel by gravity feed.

Control.

The control side levers are of the sub-lever type, both shifting and brake levers being outside the body within easy reach of the driver.

The spark and throttle control levers are located on the steering gear above the wheel, which makes them very accessible. The throttle is also controlled by foot lever, located between the brake and clutch foot levers.

Steering Gear.

The steering gear is of the worm and gear, irreversible type, with aluminum and mahogany three ply rim 16 in. in diameter. The steering column is securely anchored

between the side member of the main frame and sub-frame and is braced in the dash The steering cross rod is carried in front of the axle and the side rod extends from under the front axle to the steering arm.

Fig. 2. Left side view of Colby Motor showing water pump. The bore is 4 in. and the stroke 4½ in., giving a horsepower of from 25 to 32

It is made from ⅞ in. seamless steel tubing and ball and socket joints with provision for adjustment.

Brakes.

The Colby Model L is equipped in the usual manner with two sets of brakes on the rear wheels. The service brake is internal expanding, operated by a foot lever. The emergency brake is external contracting, operated by hand lever on the side control set. The brakes are 12 in. in diameter and have 2 in. face. They are supported on discs on the rear axle housing which also protects the brakes from dust and mud.

Wheels.

The wheels are artillery type, 36 in. x 4 in. front and rear with ten spokes in the front and twelve in the rear, equipped with Quick Demountable rims. The large wheels and long wheel base make a very easy riding car.

Axles.

The front axle is a one piece drop forging with chrome-nickel knuckles and ball bearing hubs. The spring seats are forged integral.

The rear axle is of the semi-floating type, fitted with special alloy steel planed gears and chrome nickel steel shafts. The transmission, located on the rear axle, has three speeds forward and reverse, selective sliding gear. The propeller shaft is chrome nickel steel housed in taper steel tube which

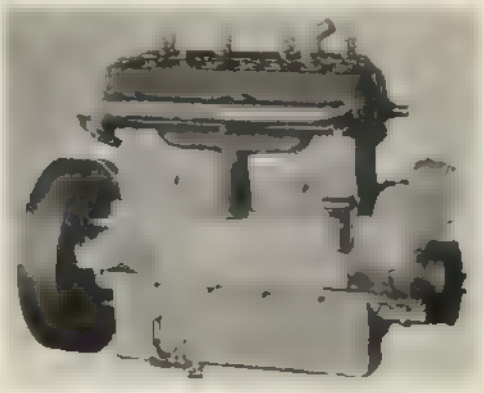


Fig. 3. Right side view of Colby Motor showing enclosed valves and absence of exposed working parts. The gage shown at the bottom of crank case is for indicating the level of the oil

serves the purpose of torque rod. The universal joint is housed in the ball end of the torque tube which is supported by a bracket on the pressed steel cross member.

Bodies.

The Underslung will be equipped regular with either four passenger touring car or two passenger roadster, both with fore doors. The equipment will be two gas lamps, generator, three oil lamps and horn.

THE "KING" IS CROWNED IN DETROIT

Automobile advertising men have from time to time developed some rather unique methods of bringing their car before the public eye. The man behind the King took advantage of the public interest in the big doings in London, and arranged an elaborate coronation ceremony for the King car, on Thursday, June 22nd. Elaborate invitations announcing the coronation were sent, and a large number from Detroit's select automobile-loving circles were attracted to the ceremonies.

Smalley Daniels, 23 Motor Mart, Boston, Mass., has lately taken over the marketing of factory product of the Boreas Wind Shield manufactured by the Page Woven Wire Fence Company, Adrian, Mich., and Forse speedometers, manufactured by the Forse Manufacturing Company, Anderson, Ind. He has also opened offices in Chalmers Building, 1469 Michigan Avenue, Chicago, Ill., and in New York City in Motor Hall, 250 W 54th Street.

SWINEHART CAPITAL INCREASED

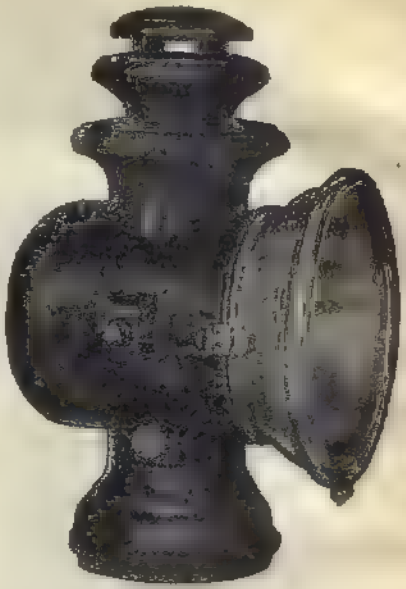
After hearing the report of the company's business for the past year—which showed an increase of 200 per cent. over the preceding twelve months—the stockholders of the Swinehart Tire Rubber Company, of Akron, O., increased the capital stock from $400,000 to $800,000. This action was taken June 27, at the annual meeting of the stockholders.

but they will give way to an overpressure of the compressed air. The lever has three positions: 1st, air pump in gear by rods (i) and clutch collar (h) pressure valve (e) closed; 2nd, air pump out of gear pressure valve closed and at rest; 3rd, pressure valve (e) opened air pump in gear, compressed air admitted from the vessel through the dividing slide into the cylinders. When the car is stopped for any length of time, the compressed air in the vessel can be shut off before the valves. For this purpose a separate valve k is provided which is fitted to the valve case e into the connecting pipe of the air vessel.

DIETZ LAMP FOR COMMERCIAL VEHICLES

In addition to its well-known line of pleasure lamps the R. E. Dietz Company, of 60-62 Laight street, New York City, has

Dietz "Royal" Steel Tail Lamp.



Dietz "Royal" Side Lamps.

also placed on the market this year side and tail lamps adapted for all sizes of commercial vehicles. The lamps are made of heavy gauge steel, japanned black.

The side lamp is fitted with a lens which can easily be replaced. This lamp lists at $15.00 per pair with plain lens. A smaller size, known as the "Royal Jr." lists at $7.00

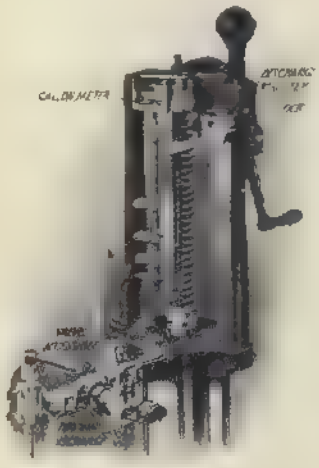
The "Royal" steel tail lamp is fitted with a removable ruby semaphore lens. This lamp lists at $3.50, and is furnished in all colors to harmonize with the body color.

Fire Apparatus Used by the Fremont, Ohio, Fire Department.

The fire apparatus illustrated herewith is owned by the Fremont Fire Department, Fremont, Ohio. The chassis and motor were manufactured by the Thomas Company, of Buffalo, N. Y., while the body was especially designed by the Webb Fire Apparatus Company. This machine carries 1000 feet of hose and its total weight is 8,485 pounds without men. In answering a call usually about seven men are carried. The Fisk Removable Rim equipment is used.

We illustrate the No. 1 Long Draw Pump, equipped with all accessories, which is quite a popular one

The two way discharge, lock and discharge register are a part of the standard equipment, no extra charge being made for them. The gallon meter is charged for extra. The gallon meter automatically regis-



No 1 Long Draw Pump.

ters all of the gasoline pumped up to 100,000 gallons and repeats automatically. It is strong, accurate and reliable, as it will not easily get out of order and is not liable to be broken, as it has no glass parts and is enclosed in a heavy metal case. The indications are large and plain and can be read at a glance.

NEWCOMB CARBURETORS

The Newcomb Carburetor is the float feed instrument perfected by the addition of a metering mechanism which measures the air supply under all conditions. The carburetor operates on a constant vacuum and automatically enlarges the effective air and fuel openings in direct proportion to each other and to the demands made upon the carburetor for explosive mixture

The metering mechanism is in the vaporizing chamber. It consists of a hollow plunger surrounding the pipe into which the gasoline flows from the float chamber. There is a fuel needle at the upper end of the plunger. This needle closes the fuel nozzle. As it rises with the plunger, the opening of the fuel nozzle becomes larger, allowing a corresponding increase in the quantity of gasoline drawn off. Also, when the plunger lifts, openings are uncovered which let in the air. The higher the plunger is lifted, the larger the openings, and the larger the supply of air. The lower end of the plunger is perforated for the free passage of the nozzle.

Near the bottom edge of the plunger a number of small holes are drilled for the distribution of the fuel after it has issued from the main fuel measuring orifice. These holes are arranged to register with an equal

Newcomb Carburetor.

number of relatively narrow air slots cut in the plunger tube or cage. When air is drawn through the carburetor the plunger lifts in proportion to the amount of air drawn. The needle in the nozzle lifts at the same time, releasing the exact amount of gasoline needed to correctly charge the entering air.

The fuel flows from the plunger through the holes, and is caught by jets of air coming in through the slots, and the mixture takes place. Any part of the fuel which may have remained unevaporated is thrown against the water-heated wall of the mixing chamber, where it is quickly evaporated. The extent of the heating surface, and the fact that the unabsorbed fuel strikes at right angles insures a homogeneous and dry mixture.

By means of an annular ring it is possible to lift the plunger, withdrawing the needle without uncovering the air slots. In other words, the opening of the fuel port may be given a lead with respect to the opening of the air ports. This allows adjustment to slightly increase the richness of the mixture for idle running, but it does not appreciably affect the load carrying mixture. The load carrying mixture is regulated by means of the knurled screw on top of the float chamber, which adjusts the back suction on the fuel in the float chamber. When this screw is turned downward, this back suction increases, reducing the flow of fuel and weakening the mixture.

The prices range from $45 for the 1¼-in size to $125 for the 2½-in. size. The instrument is made by the Holtzer-Cabot Electric Company, of Brookline, Mass.

THE UNIVERSAL DOOR CURTAIN CARRIER

This is a device to hold the storm curtains on the door, separating the door curtains from the others, so that opening the door opens the curtains also, rendering it unnecessary to unbutton curtains to get in or out.

It consists of two parts made of pressed steel, black enameled, one piece fastening to the door to carry the curtain with it when opened or closed, the other piece to carry the back edge of the front piece of the curtain. It does not detract from the appearance of your car and is thoroughly practical

The Universal Door Curtain Carrier in use.

A simple, reliable device clamps over the door and is held there without scratching or marring same by four curtain fasteners. It does not rattle or come loose and is quickly detachable and collapsible, so that it can be folded up and put under the seats with the curtains when not needed.

Any top-man, in three or four hours and at a small cost, can install this device and make the slight changes necessary.

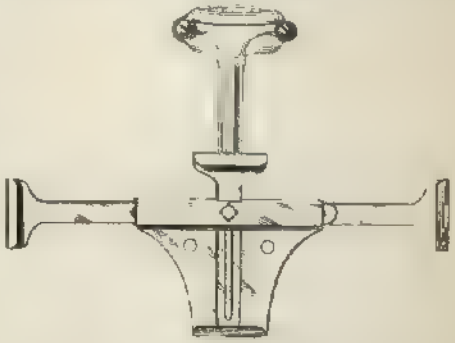
It can be used on either or both sides on almost every car having doors opening from either front or rear.

It is being put on the market by Knight & Company, Cincinnati, O.

THE "HANDY" ADJUSTABLE LICENSE TAG HOLDER

The "Handy" License Holder, which we illustrate herewith, is made to fit the radiator filler and hold the tag in a prominent place so that it cannot jar loose, and yet is attractive and adds to the appearance of the car.

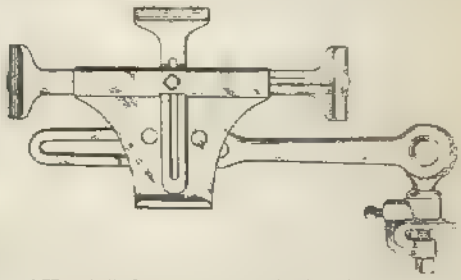
The adjustable arms, held by a thumb nut, allow the placing of any size or any number of licenses in the holder so that they can be changed in a few seconds without soiling the hands or clothes.



'Handy' License Tag Holder for front

The "Handy" License Holder for the front of the car is designed to clamp in the channel section of the chassis. It can be adjusted to any position whatever, so that the license is held in the most desirable place.

The "Handy" License Holder for the rear of the car holds the tag in such a manner that the rays of light from the lamp shine



'Handy" License Tag Holder for rear

directly on the license, illuminating it at night. The holder clamps right on the lamp post, and is adjusted to any position desired without taking the lamp off.

These brackets are made by the Seybert Machine Works, of 1536 Seybert street, Philadelphia, Pa., and sell at $1.75 in polished brass and $1 in black enamel.

AMERICAN OIL PUMP & TANK CO.'S GASOLINE STORAGE OUTFITS

The American Oil Pump & Tank Company, of Dayton, O., is making a large variety of gasoline and oil storage outfits, suitable for garages of all sizes, public and private.

The underground storage tanks of this company are made of American pure iron, galvanized and painted. American pure iron is positively corrosion proof. The tank is constructed with the rivets spaced three-quarters of an inch on centers, and all seams are thoroughly soldered inside and out.

THE PRINCE HENRY TOUR IN GERMANY

The great annual Prince Henry of Prussia motor tour, which started at Homburg and proceeded in three one-day stages from Coln, Munster to Bremerhaven, is this year exciting special interest as its course traversed, for the first time, England and Scotland, making a particularly interesting finish in London, occupying a space of about ten days.

The first stop occurred at Feldberg (8.30 A. M.), which is situated at an altitude of 2,000 ft. German girls here presented the tourists with bouquets and refreshments. It was noticed that in climbing the severe gradient to Feldberg several cars had trouble owing to the water in the radiators boiling. The second stop was at Braunfels, where Prince Solms provided refreshments at Braunfels Castle

Prince Henry of Prussia Starting on tour at Hamburg

Although the majority of the cars forming the English section left Harwich for Homburg on July 1st, several of the English competitors and their cars crossed from Folkestone to Boulogne earlier in the week, and proceeded via Amiens, Luxemburg, and up the vine-clad valleys of the Moselle and the Rhine to Homburg

On Tuesday morning, July 4th, the competing cars assembled from nine onwards in the drill ground of the Infantry Barracks, where competitors and their observers met, and the cars were examined cursorily by various officials of the two clubs. Competitors were provided with tour cards, armlets and other necessaries in connection with the competition

On Tuesday evening Prince Henry held a reception at the Hotel Ritter, Homburg.

On Wednesday morning Prince Henry in his car was the first to start at seven o'clock, the car entered by the Duke of Connaught being second

RACING ON DIRT TRACKS

One very important subject which will be given most careful consideration at the general meeting of the Manufacturers' Contest Association to be held in August, will be the question of racing upon circular dirt tracks. All over the country there are in existence one mile circular dirt tracks built for horse racing. The popularity of the motor car and of motor car competitions has prompted county and state fair organizations to feature motor car racing among the head-liners of the "big days." In addition to this, racing events on circular dirt tracks are being advertised by individual promoters who have in mind the possibility of a considerable financial return in the way of gate money.

At a meeting of the active rules committee held in Detroit on June 19, it was the consensus of opinion that decisive action should be had at the August meeting for the restriction of circular track racing. Whether racing of this kind upon mile dirt tracks

should be legislated against by the governing body, or whether sanction for circular track events should be granted only after an entire reconstruction of the track surface and surroundings and some adequate provision other than the use of water has been made for laying the dust, are open questions In any case, the situation requires decisive action

NATIONAL WINS AT BAKERSFIELD

The races on July 4th, at Bakersfield, Cal., the oil center, attracted great attention in California Harvey Herrick, in a 40 h. p National proved the hero, winning the 156 1 mile free-for-all in 2.58:58 1 5, with Bert Dingley, Pope Hartford, second. The course was a ten mile one, in a natural amphitheatre which enabled the spectators to follow the cars for almost the entire distance. It was also unusual for including a decided grade with a sharp turn at the top, making the race a combination of road and track event.

OSSINING HILL CLIMB

The Hill Climb at Ossining, N. Y., proved a clean sweep for the National cars entered, as four events in which they were entered, out of five, were captured by them. The other race went to the Mercer. The foreign cars featured at the tail. The 200 h. p Fiat came in last in the free-for all, thanks to a stuttering carburetor, and the special Mercedes got second in its events

The hill is not quite up to the mark of a difficult climb, being not up to Sunset Hill, which was used in previous years

The starting point was at the limits of the village of Ossining on the north side and the course was laid out 2,814 ft. toward the center of town. The whole hill has an average grade of 6½ per cent, and a maximum of 11½ per cent. There is one curve of about 15 degrees.

The summaries

Class E, Special for 160-300 Cars.

Car	Driver.	Time
Mercer	Van Wyck	:48 1-5
Mercer	Sherwood	:52 1-5
Fiat	Detroit Craig	:58

Class C, Division 4, for 301-450 Cars.

National	Bragg	:38
National	Rutherford	:39 4-5
Pope-Hartford	Dishrow	:40
National	Tierney	:40 3-5

Class C, Division 5, for 451-600 Cars.

National	Zengel	:33 4-5
Mercedes	Wishart	:34
Pope-Hartford	Dishrow	:41

Class E, for Cars Owned and Driven by Members of Upper Westchester A. C.

National	Wilson	45 1-5
Stearns	Wallace	47 2-5
Mercer	Sherwood	51 2-5

Class D, Free For All

National	Zengel	37 4-5
Mercedes	Wishart	34 4-5
Fiat	Stuart	37 1-5
Pope Hartford	Dishrow	41 1-5
Fiat	Bruce-Brown	42 4-5

LEWIS STRANG KILLED

The well known racing driver, Lewis Strang, was instantly killed on July 20th, near Blue River, Wis., while driving the machine of the Technical Committee in the Wisconsin Automobile Association's Annual Reliability Run

Reports are conflicting as to the manner of receiving his death, but it is generally believed that following his well known methods, he was driving at speed and attempted to pass around two wagons. It is stated that he hit one of the wagons, which owing to the fact that he was driving while still suffering from a broken arm, made him lose control of his machine which pitched over an embankment, overturning upon him.

Metropolitan and Newark Divisions of the Premier Ocean-to-Ocean Amateur Touring Party leaving Newark June 25 1911, for San Francisco via Atlantic City. The entire party, consisting of forty-eight Premier tourists with an escort of 100 motorists, left Atlantic City in a body for San Francisco June 26 1911 and were at Mantello Utah July 2

Brake Construction.

The internal brake of Series "B" is of the expanding band toggle operated type equally effective in either direction. These bands rest on supporting screws which center the bands in the brake drums, and while being made of hard cold-rolled steel having considerable initial spring, this spring is supplemented by spring R-1396 which aids in properly releasing the bands. All four brakes are lined with asbestos friction linings.

Fore-Door Bodies.

The principal change in the appearance of the Series "B" cars from their predecessors is in the equipment of these cars with the fore-door type of body.

In the design of these bodies the graceful sweeping coupe lines have been carefully worked out, giving a distinctive style.

Speedwell Motor Cars

For the season of 1912, the Speedwell Motor Car Company, of Dayton, O., is using the same model as that produced during the past season, with the exception that the transmission gear set has been changed. The line comprises one standard chassis of 121 in. wheel base and 50 h. p. four-cylinder water-cooled motor with the distinct styles of bodies. The touring car illustrated herewith is one of the headliners and sells for $2750 minus top and windshield. The cylinders of the motor are cast in pairs with integral cylinder heads and valve chambers, but with separate water jacket heads. The pistons are cast from the same metal as the cylinders, viz., reverberatory air furnace iron and are ground to a finish. Each piston is fitted with four ground eccentric expansion rings with lap joints. Lubrication is by a self-contained force-feed system, having a reservoir containing 1½ gallons of oil in the lower part of the crank case.

The braking surface is about 1 sq. in. for every 7 lbs. of car. The brakes operate on the rear wheel hubs and are manipulated by the usual pedal and hand lever.

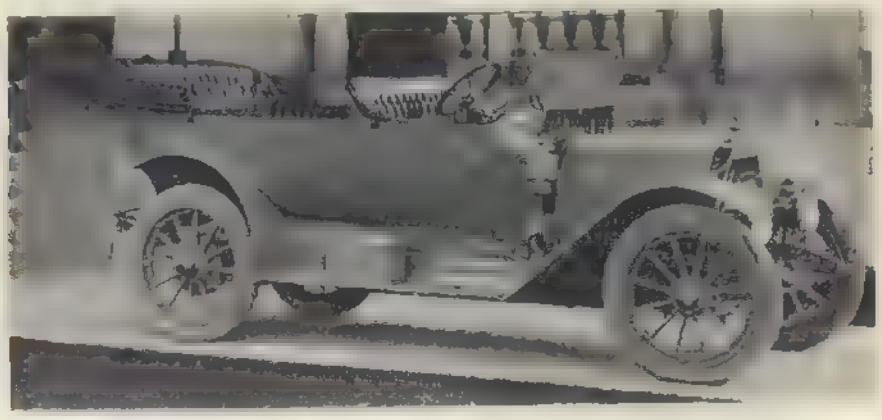


Fig. 1. Speedwell five-passenger touring car. This model is the same as that built for the season of 1911, except that the transmission has been changed. The price is $2,75[illegible]

Fig. 2. New transmission used in Speedwell cars for the 1912 season. This cut shows the parts disassembled

The engine ignition is the Bosch dual system, consisting of a Bosch high-tension magneto in connection with a single non-vibrating coil, and self-starting mechanism contained in a small brass case set in the dash; both systems operating on a single set of plugs.

The Speedwell models are equipped with an electric lighting system, which seems to be the coming thing for 1912. A gear pocket is mounted forward on the motor on the left hand side, to accommodate the "Apico" dynamo which generates the current. The dynamo in connection with a voltameter, large storage battery and "load regulator" furnishes steady, powerful lights whether motor is at slow, medium or high speeds, or at rest.

Both open and fore-door bodies are offered, while in color, striping and upholstering, the buyer is given a wide range of selection.

The Cycle "Motor Wagon"

By William J Johnson

The two cycle motor has ever been an alluring proposition to the engineering fraternity and occasionally an announcement is made of something out of the ordinary. It is to be noted that the ordinary sort is that which prevails today with modifications in general design from one season to another, the aim, the betterment of that which is already considered satisfactory.

Those interested in this type of prime mover will mark the advent of the Motor Wagon made by The Motor Wagon Company, of Detroit, Mich. This vehicle which is designed to transport an 800 lb. load and sells at $610 is equipped with a two cycle, two cylinder opposed water cooled motor of 16 h. p. Both cylinders fire at the same time. This vehicle is the design of S. R. DuBrie, who by the way is the second oldest two cycle engineer in this country, so it is said. The transmission is a two speed and reverse member, final drive being through double side chains. Now then, a word as to those responsible for this new two cycle car.

Strathern Hendrie is the president of The Motor Wagon Company, of Detroit, and W. Howie Meur is secretary, Fred M. Alger, treasurer; the principal stockholders being besides those above mentioned, Russell A Alger, former secretary of war; Frank C Crowl, P. H. McMillan, William and George Hendrie and S. R. DuBrie, the designer of the vehicle. A plant at 1379-1397 St. Antoine street has been fitted up and deliveries are to begin in June. Financially the concern is well cared for.

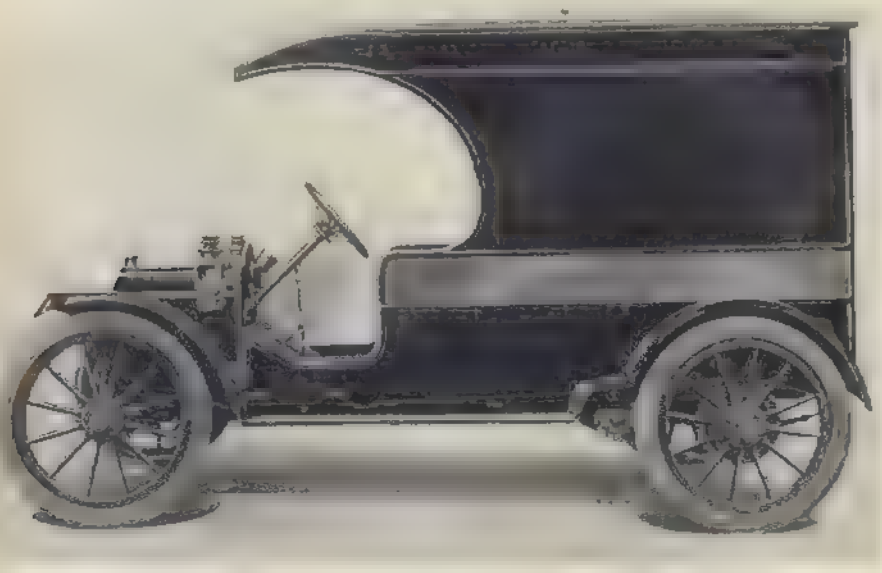


Fig. 1. Panel Body Delivery Wagon. Two Cycle Motor Wagon. The transmission permits of two speeds forward and reverse. High gear is engaged by throwing the lever forward and low by pulling it back. Reverse is engaged by a foot pedal

Motor.

The motor as above mentioned is a two cylinder opposed two cycle unit, cylinders having integral water jackets. Dimensions are square, that is, stroke and bore are both 4 in. The engine is supported at four points on the main frame through lugs cast integral with the cylinders which provide a rigid anchorage. Both cylinders fire at once by reason of which the builders claim an exceptionally well balanced unit. Disposition is such that there is a straight line drive between the engine and the transmission

The crank shaft is an alloy steel member ground on the bearing surfaces, the two main bearings being 1½ x 2 and 1½ x 4 in., the crank pin diameter being 1½ in. also The forward bearing is integral with the crank case.

Pistons follow the usual two cycle practice and have integral deflector plates on the heads. There are three compression rings to each piston, these being disposed above the wrist pins which are held in the piston bosses with set screws, ⅛ in. diameter

The connecting rods are drop forged steel of the usual I-beam pattern split at the eye

THE LEADER VULCANIZER

The Leader Manufacturing Company, of Cleveland, O., is offering for 1912 a novel and convenient tire vulcanizer which we show in the accompanying cut. The device weighs but 6 lbs. and can be carried in the tool box. It is operated by steam heat, the heat source being a unique gasoline torch which is adjustable. It requires less than three minutes to get up steam, and gasoline is always on hand in the car tank. The device is suitable for casings or inner tubes and is equipped with a safety device

Leader Vulcanizer.

The price of the complete outfit is $15.

AMERICAN BALL BEARING COMPANY'S REAR AXLE

The American Ball Bearing Company, of Cleveland, O., is placing on the market the illustrated rear axle. This is of the full floating type, and is made in three sizes, for cars weighing from 2000 to 2600 lbs., up to 3300 lbs., and from 3500 to 4000 lbs.

The entire differential and pinion shaft are mounted on the pinion housing casting and inserted in the axle as a unit, and may be adjusted when in place.

The housing is drawn from heavy gage steel, autogenously welded, and has substantial ribs which add materially to the strength.

American Ball Bearing Company's Rear Axle

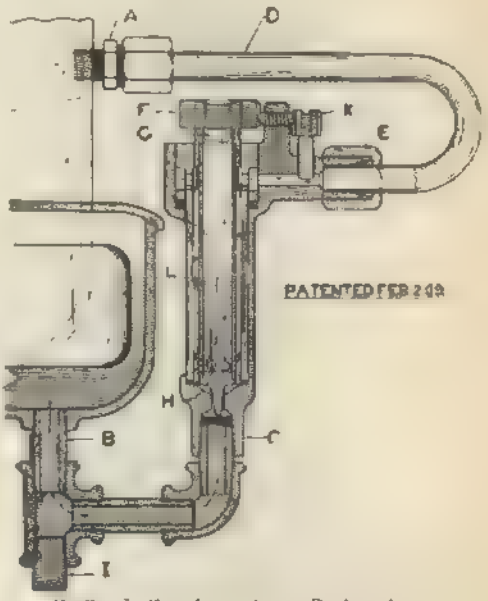
The taper wedged rear axle tubing is of 3½ per cent. nickel steel. Hub bearing seats are machined and accurately ground All of the bearings are of annular type of best foreign manufacture. Rear hubs and gear mount castings are of Isaac G. Johnson Company's direct steel. Spring seats are drop forged. Differentiating gears are of 3½ per cent. nickel steel. Teeth are planed. Axle shafts and driving shaft are of chrome vanadium steel, properly heat treated to give the highest physical properties possible. Internal and external brakes are 14 in. diameter, lined with extra heavy woven wire asbestos, acting on sheet steel brake drums. A rear inspection plate is provided

WEILAND SUPPLEMENTARY CARBURETOR

This has as its object the priming of the motor, and is attached to the carburetor as a permanent fixture

It is attached to the side of the float chamber in such a way that the float level is visible in the gage glass. The amount of gasoline in the gage glass is adjusted according to the size of the engine. The Supplementary Carburetor is connected with the bottom of the float chamber, and the gas outlet is connected with the intake pipe at some convenient place between the throttle and the inlet valves.

With this device, advantage is taken of the high suction between the throttle and the inlet valve when the engine is running on partly open throttle. The air enters through the tube G, down through the gasoline, out through the holes H, in the bottom of the tube and up through the gasoline



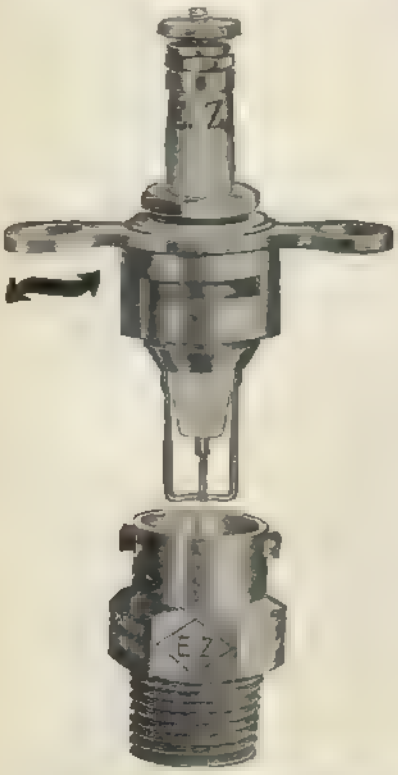
Weiland Supplementary Carburetor.

into the gage glass. In this way the air travels down and up through the gasoline (in starting), which gives a very rich mixture for starting. When the engine is running, all the gasoline is taken from the gage glass, and only gas is seen above the holes H. The holes H are below the level of the gasoline in the float chamber, and when the engine is running the gasoline is just below these holes. No suction is created on the gasoline in the float chamber, as all the air openings for admitting air to the Supplementary Carburetor are very much larger than the outlet. The flow of gasoline is under the constant head of the

gasoline in the float chamber, and as this is always the same the supply of gasoline from the Supplementary Carburetor is the same at all speeds. The flow of the air, however, varies with the speed of the engine. At slow speed and at starting a very rich mixture is supplied and at high speed a very weak mixture. By having the gasoline flow independent of the air velocity the defect of most carburetors is overcome; that is, when starting, or when a sudden load is thrown on the engine, the air velocity past the nozzle drops very low and the gasoline stops flowing, with the result that the motor stalls. It is made by the American Die a Tool Company, Reading, Pa

"E. Z." QUICK DETACHABLE SPARK PLUG

This is made by the Autoparts Manufacturing Company, Inc., 56 Pine Street, New York City, and can be opened, cleaned and closed in four seconds. It has been materially improved in a few minor details.



"E. Z." Quick Detachable Spark Plug

Less than ⅛ turn opens, releases the core with both terminals in the detached member, always insuring an accurately adjusted spark gap, undisturbed by removing the core. The plug has no metal to metal joints, asbestos gaskets preventing leakage of compression.

DANIEL OVERBOOTS

Daniel overboots are made of any material and open in the back. They close automatically by means of steel bands concealed in the leg of the boot. The heel is hollow These boots are a good protection against

Daniel Overboots

rain and cold, and at the same time allow freedom of the feet and legs. They are no heavier than the ordinary boot, and are medium in price. Everitt Daniel, of Moultrie, Ga., is the maker

MICKELSON MOTORS

The Mickelson Motor Company, of Milwaukee, Wis., has gotten out a new 5 in x 6½ in. motor for truck or heavy duty service

This motor is designed along the lines of their smaller motors, but great care has been taken to make this an ideal truck motor, and in view of this all wearing parts have been well taken care of, and the proportions are such as will insure long life to motor

The mistake that most truck builders are making is that they use the regular pleasure car motor in their trucks. In the construction of the pleasure car motor one of the chief factors is the reduction of weight to a minimum. In truck motors the matter of weight reduction should not hamper the designer from getting out an article that will stand the heavy duty service required of truck motors.

The cylinders are cast in pairs and are made of the best gray iron. Cylinder bores

If the mixture is too rich CO will be presented in the exhaust. In ordinary practice it will not be found necessary to resort to the CO analysis. If the percentage of CO_2 is low we know that the mixture is either too lean or too rich. The adjustment of the carburetor can be changed and another sample taken in a couple minutes time. If an improvement is noted the adjustment has been made in the right direction. The oxygen and CO absorptions are relatively slow and require about seven minutes. The outfit sells for $35, complete.

THE COLUMBUS CARBURETOR

This carburetor is the outgrowth of several years' experience in carburetor production, and has been designed with the idea of obtaining automatic control from the lowest to the highest speeds. Simplicity, avoiding complex adjustments, is a feature of the carburetor. It provides for perfect carburetion on slow speed simply through the inner, or Venturi tube, then as the motor speeds up the bronze ball valves

Columbus Carburetor.

are automatically brought into service as required, and serving up to about a 40-mile rate. Finally, as the rate increases over that, the auxiliary high speed air valve is automatically introduced. When the carburetor is once adjusted to the motor it remains permanently adjusted.

Another feature worthy of mention is the sight gage which provides for the raising or lowering the gasoline in the spray nozzle to any desired level without removing or opening the carburetor. A perfect spraying of the gasoline and the thoroughly homogeneous mixture insures the greatest possible efficiency and economy.

This carburetor is made by the Columbus Carburetor Company, 810 Columbus Savings and Trust Company, Columbus, O.

BLUE PRINT AND BOOK HOLDER

This is a somewhat novel but valuable device, being put on the market by the Industrial Education Book Company, Boston, Mass. By it, blue prints are rescued from the dirt, grease, and sometimes oblivion of the work bench. Instead of being laid on

Showing the holder on bench, holding mounted blue print and open book

bench and covered with oil cans, hammers, calipers and other incidentals, the print is held up in the air, vertically, where it can be easily seen without eye strain, or removing tools.

The device consists of a standard with base. Sliding on this is a weight. The blue print is placed on the lower shelf, and weight dropped on top. An inclined plate is also provided to hold books. This is provided with a celluloid plate to keep pages open and clean. Seventy-five of these holders are being used by the Massachusetts Institute of Technology

THE HERZ AUTOMATIC TIME ADJUSTMENT

Herz & Co., of New York City, are featuring a time adjustment for magnetos, the construction of which is quite simple.

A coupling, consisting of two juxtaposed discs, is interposed between the magneto apparatus and the main shaft.

Each of these discs is provided with three curved grooves running in the opposite direction to those in the other disc: and the discs are coupled together by means of three balls running in the said grooves. At the same time these balls act like the weights of a governor, being forced outward from the centre, by the centrifugal force, to an extent corresponding to the speed of the motor; and in this way a twist is imparted to the armature of the magneto in relation to the main shaft.

When the motor slows down the balls are driven back towards the centre by the resulting peripheral forces, the armature be-

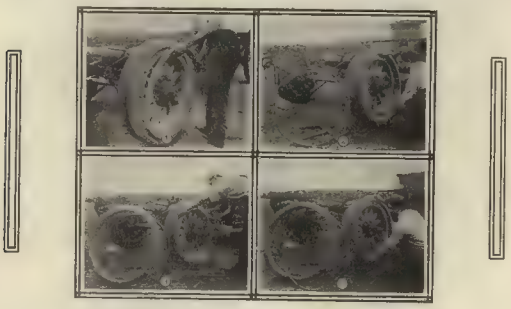
A New Demountable Solid Tire

The United States Tire Company, of New York City, has recently placed on the market a new tire branded "United States Standard Tire" (Demountable).

The one big feature of the tire which will appeal forcefully to truck owners is that through its use both single and dual tires can be changed without removing the wheel from the truck. Replacements can be made by any ordinary workman in less time than is required with styles of fastening that have heretofore prevailed.

The equipment for a single tire is an outer flange wedge, an inner flange wedge and nine, twelve or fifteen bolts and nuts depending upon the diameter. The equipment for a dual wheel is the same except that it has a center wedge in addition to the flange wedges.

All the wedges are split, which allows them to be pulled up tight and permits of a greater variation in the circumference of the wheel. The holes through these flanges for the bolts are elliptical and the difference between the outer and inner edge flange lies in the fact that the inner flange has oblong, square-cornered bolt holes and the outer flange has round cornered elliptical bolt holes.* The holes in the inside flange are square so as to hold the square shank of the bolt and in this way prevent its turning.



These illustrations show the four operations necessary to remove a dual tire, viz.: (1) Removing the flange; (2) taking off outside tire; (3) removing center wedge; (4) removing inside tire.

These demountable features are possible through making the inside diameter of the tire band ⅝ in. greater than the outside diameter of the wheel. This additional size gives a clearance between the tire band and the wheel band of 3-16 in., which makes it impossible for the tire band to rust or freeze on the wheel band, as they will never come in contact.

Into this open space wedges are forced which are part of the flanges, pulling them in and making a good tight joint by the use of the bolts running through the felloe. These wedges are of a 20-degree angle at the top and flat on the bottom. The top of the wedges come into contact with a corresponding bevel on the under-side of the tire band, forming a seat and giving metal to metal contact of about ¾ in. on both sides of the tire. These wedges are so designed as to remove all strain from the bolts.

Action of weight on the tire is to press the flange wedge directly onto the wheel band and as it seats there flat, there is no tendency to spread the flanges.

The tire itself is built on a steel band, with a layer of hard rubber between the band and the soft rubber tread. The band has a serrated periphery so as to form a dove-tailed seat for the hard rubber.

The newest feature of the tire is, of course, the method of attachment permitting the removal of the tire from the wheel without removing the wheel from the truck. Unusual wearing qualities are claimed for the new tire.

The fire department of Hamburg, Germany, operates ten automobile pumping engines, fourteen automobile steam engines, eleven automobile hose wagons, ten automobile ladder wagons. A flying squadron of fifty bicycles is also used.

Auto Runs Machine Shop.

One Saturday morning recently an automobile needed four new spring-horn bushings, and the Service Department of Wyckoff, Church & Fairbridge, Inc., of New York, left its order with its Machine Shop Department in West Fifty-second Street to be filled without fail Saturday afternoon at 5 o'clock. At 9 A. M. the machine shop notified the Service Department that the main driving motor of its machinery had broken down, and that every effort had been exhausted to have the bushings made by other automobile machine shops in the neighborhood. These other shops could not, on account of the Saturday half-holiday, take the work. In order to maintain its reputation for fulfilling its promises, the work had to be accomplished in some manner. A 60 h. p. automobile was stripped of its tire on the rear right wheel and its rim used as a main pulley from which a belt drove a portion of the shop machinery, which accomplished the work. As a last emergency resort this feat was unique and the four eccentric bushings were turned out promptly and on time. Five lathes, four drill presses, a milling machine, a grinder, three emery wheels, a power hack-saw and a shaper were all brought into action with the power furnished by the automobile.

CHANGES NAME.

The Steinhauer Truck & Motor Car Company, of St. Louis, Mo., manufacturers of the Steinhauer commercial cars, has changed its name to the Red Star Motor Truck Company.

AUTOS FOR FISH DELIVERY

Five Knox trucks are now in daily use by the Western Fish Company, the largest fish concern in the West, in making deliveries to customers. All horses have been displaced and one commercial car now does the work of three teams.

WARD CO. TO BUILD AUTOS

On what is said to be good authority, the Ward Bread Company, of Boston and various other New England cities, well convinced of the efficacy of commercial cars, is about to undertake the construction of seventy-five vehicles of their own design.

W. T. Kennedy has been appointed head of the transportation cost bureau, which has been established by the American Locomotive Company in connection with the motor truck department.

MOTOR CARS FOR JAMAICA BANANA HAULING

The agent of the Kissel Car Company, of Hartford, Wis., has returned to the United States with both of the motor cars which he took to Jamaica for banana hauling. Although the Kissel car did satisfactory work in the parish of St. Mary, Jamaica, it was found that it would not pay to run the machine for hire as a common carrier of bananas to Port Maria, and no individual planter was willing to pay what the agent asked for the car.

An interesting experiment is about to be made to reduce the cost due to wear of tires on the Jamaica roads, which is so great as to be almost prohibitive of the use of rubber-tired machines. Three trailers are being built, to be drawn by a motor, and as the bananas will be hauled on these trailers the weight on the rubber tires will be greatly reduced. Aside from the economy in tires much more service can be obtained from one machine, as one trailer may be left at the plantation to be loaded and another at the wharf to be unloaded while the third is making trips between the points.

America Again Wins International Cup

This makes the second time America has won this trophy, and brings the race back to this country

The distance was 150 kilometers, 30 times around a five-kilometer course, and Weymann covered the distance in 1.11:36.2, an average speed of 78.2 miles per hour.

Second to Weymann was Alfred Leblanc, in a 100 h. p. racing Gnome-Blériot, with Edouard Nieuport, 70 h. p. Gnome-Nieuport, third

Weymann has been flying about two years and has earned quite a reputation, at one time holding the altitude record with a height of 4100 feet, and on another occasion carrying two passengers 40 miles cross country

He was in the European Circuit, but withdrew to represent America in the International Race. While we may rejoice that we have again won the cup, our joy is tempered somewhat by the fact that it was done with a French machine

The first International aviation race at Rheims, France, in 1909, was won by Glenn H. Curtiss, sole American entrant, on a Curtiss biplane. His average speed for the 50 kilometers was 47 miles an hour. The race last year on Long Island was won by Claude Grahame White on a 100 h. p. Gnome Blériot, with an average speed of 61.3 miles an hour During the same period Alfred Leblanc set a speed mark of 67 miles an hour

AVIATOR WEYMANN IN MONOPLANE

The International Cup Race on July 1, at the Royal Aero Club field on the Isle of Sheppy for the Co[illegible] International Aviation, was won by Cha[illegible] J. W[illegible] [illegible] American, in a 70 h. p. [illegible] monoplane

MARS INJURED AT ERIE

Bud Mars, one of this country's well known aviators, was badly injured on July 14, during an aviation meet at Erie, Pa. He made several flights successfully, but when he started to descend the last time he lost control of his machine and pitched to the ground from a height of several hundred feet. Just what was the immediate cause of the accident is hard to say. Before going up, Mars remarked that the air was bad. He will recover

BEACHY MAKES SENSATIONAL FLIGHT OVER NIAGARA

One of the most sensational, dangerous and daring flights which have been made was that of Beachy on June 27, when he flew over Niagara Falls, under the upper steel bridge to the whirlpool, and then up out of the canyon, landing on the Canadian side

He is the first to pass over the falls in an aeroplane. He dipped over the Horse shoe Fall so low that he was lost for a moment in the mist. Reappearing he skimmed close to the river surface, and passed under the upper steel bridge, continuing until he reached the whirlpool, when he mounted out of the gorge and landed on the Canadian side

Beachy started in aeronautics with a dirigible balloon, when aeroplanes were not so reliable as now. He did not take up aeroplaning until late last year, when he joined Curtiss, at San Diego

METALLIZED AEROPLANE FABRIC

The Theo. H. Gary Company, 41 Union Square, New York City, is importing a fabric for aeroplanes and balloons. It is a substance thoroughly rubberized, i. e., saturated with rubber and covered with a layer of light metal. This material prevents the expansion of gases by the sun's rays in a balloon, because it reflects a large percentage of the light, so that it does not materially affect the gas inside.

For aeroplanes this substance minimizes wind friction and gives a most beautiful appearance.

ATWOOD'S REMARKABLE FLIGHT

One of the most sensational, as well as successful flights made in the United States, was recently completed by Harry N. Atwood, a young aviator of Boston, Mass. The flight was from Boston to Atlantic City, and from there it was continued to Washington.

The daring aviator left Boston on June 30th at 7 A. M., and steered a course over Providence, arriving at New London, 135 miles from Boston at 9.15 A. M. the same day. At 7.05 A. M., July 1, he left New London and continued his flight along the north shore of Long Island Sound, arriving at New York (133 miles from New London) at 10.20 A. M. He selected Governor's Island as his landing place and later in the day he sailed over New York City, nearly circling the tower of the Singer Building and giving the office building workers a real excuse to look out of windows. After this he took an army lieutenant up for a short flight.

On July 4th, at 8.49 Atwood left New York and held his course down the coast of New Jersey. Running out of gasoline, he was compelled to stop at Asbury Park to renew his supply. After a stop of ten minutes, he flew away to the south and passed over Point Pleasant, Bay Head, Sea Side Park and Island Heights. In flying over Barnegat Bay, Atwood came very close to earth and was seen by thousands of yachtsmen who were preparing for 4th of July races.

Upon nearing Beach Haven, Atwood's supply of gasoline again gave out and he was compelled to land at Tuckerton, just across the bay, to replenish his supply. The journey from Tuckerton to Atlantic City was the hardest part of the journey, as the wind was increasing and had reached a full gale. The plucky aviator was compelled to fly nearly fifty miles in order to negotiate the intervening eighteen miles and was again compelled to stop at Venice Park, just in back of Atlantic City, for another supply of fuel.

After this last delay Atwood went straight across the city and landed in a roped off space in front of one of the large hotels. The next few days were spent in exhibition flights and passenger carrying and then, with Charles K. Hamilton as a passenger, the flyer laid a course straight for Baltimore, covering the 148 miles in 4 hours and 41 minutes. The 30 miles from Baltimore to Washington was completed later and a series of flights given over the latter city.

Aviator Atwood flying near tower of the Singer Building, New York City.

Harry N. Atwood has completed nearly 500 miles on this trip and holds the record for long-distance passenger-carrying. Although he has no aerial license, he has shown more skill than many other licensed aviators and it is to be hoped that he gets his "scrap of paper."

NEW AVIATION RECORDS

Clieslagers, the Belgian aviator, made a new air record in a monoplane on July 17, when he flew 388 miles at Brussels without a stop. Loridan, piloting a small biplane at Mourmelon, France, covered 465¼ miles in 11 hours and 45 minutes, making new records for both time and distance.

KisselKar Trucks

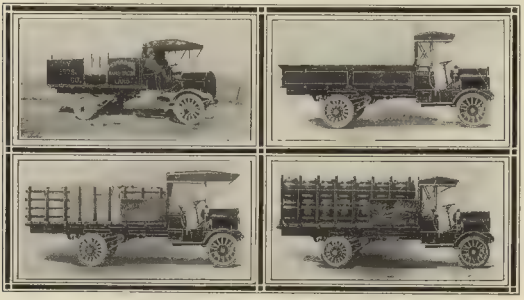
In building a line of trucks and commercial cars, the Kissel Motor Car Company, Hartford, Wis., has been at great pains to provide a line of vehicles of right capacity and horse power to be most economically adapted to all the various conditions of haulage and delivery.

The heavy duty KisselKar trucks include one and one-half to two-ton, three, four and five-ton trucks. The delivery wagon line includes a light 1500 lb. delivery wagon and a special delivery wagon of 2500 lbs.

The one and one-half to two-ton truck is ideally adapted for service that combines medium freightage and heavy delivery. It is powered with the standard 40 h. p. KisselKar motor, 4½ x 4¾, has 140 in. wheel base, 60 in. tread, total length 18 ft., loading space 10 ft. 5 in., speed 25 m. p. h. The fourth geared up speed on this truck makes full speed on empty trips a judicious practice, and where hauls are comparatively short, this model can accomplish almost as great a day's work as a four or five-ton truck.

The three, four and the five-ton KisselKar trucks are built after the highest standardized construction, and are equipped with a 50 h. p. KisselKar motor. In trucks for this heavy duty service, the special KisselKar protection of the power plant from road shock, and road flexibility, are factors of importance in reliability and low up-keep.

Excess capacity and reserve horse power are characteristics of KisselKar trucks. The fourth geared-up speed permits time-making on empty trips without racing the engine, materially increasing the daily mileage possible in short or medium hauls. The KisselKar lock on the differential gives assured reliability on all roads, in all weathers. In heavy duty service, when one drive wheel is in a hole, or in mud, on ice, or snow is spinning rapidly and robbing the other wheel of power, the driver, by a foot lever applies the lock on the differential, locking both wheels together as on a solid axle. This compels an equal distribution of power, the wheel on solid ground supplying the traction. In heavy haulage on water fronts, in railroad yards, or wherever extremely difficult road conditions are liable to be encountered, this is an invaluable feature.



1912 Kissel Kar Trucks.
This cut shows the KisselKar three-ton truck in four different body styles. Special bodies built to order.

KisselKar trucks are carefully designed to afford easy accessibility. The bodies are built with a proper rear overhang, so as to bring the major load weight over the traction wheels and to allow of more sensitive spring suspension to protect the power plant from road vibration.

KisselKar Delivery Wagons.

While the chasses of these models are built on pleasure car lines, they are not regular pleasure KisselKar chasses. They are built heavier with special springs and perfectly adapted to delivery service. They are well powered to negotiate all road conditions, and give the maximum speed which increases working radius by which the power delivery wagon becomes a productive factor in increasing trade.

The light delivery wagon has a capacity of 1500 lbs. It is equipped with a 30 h. p. motor, 4¼ in. x 4¼ in., has a 120 in. wheelbase, 56 in. tread, and a three speed selective type of transmission.

The KisselKar factory also puts out a special delivery wagon of 50 h. p., to supply the demand for something between the light wagon and the one-ton truck. This wagon has a 124 in. wheel base, a 56 in. tread and a selective transmission having four speeds forward and one reverse.

The KisselKar Engine.

The design of the KisselKar motor embraces every feature adding to simplicity and easy control. The self-contained oiler, consisting of a special tank and gear-driven pump, forcing oil through tubes to every part, insures perfect lubrication. An oil level makes it simply a matter of eyesight to supply proper lubrication under all conditions, practically trouble-proofing the motor. Besides grinding parts to size, every part of the KisselKar motor is lapped with the part with which it goes with a special lapping machine—the piston into the cylinder, piston rings into grooves, etc. All parts are weighed, carefully balanced; first the crank shaft separately, then with flywheel, connecting rods, etc. The simplicity of this engine, and the foot accelerator, assuring easy control and reliable, good service in the hands of the average type of driver.

The engine is of the water cooled type, positive circulation being maintained by a centrifugal pump, and carburetion is effected by means of a Stromberg float feed carburetor, having a water jacket for warm water and an air inlet shut-off for starting in cold weather. Ignition is by an imported Mea or Bosch dual magneto, and the motor is lubricated by a special splash system.

KisselKar Chemical Fire Truck.

An up-to-date motor driven chemical fire truck is also built by the Kissel Motor Car Company.

The chassis of this truck follows the general pleasure car construction, but is built considerably heavier. It is powered with a 50 h. p. KisselKar motor and easily makes forty-five miles per hour. The 56 in. tread and double drop frame minimize skidding. Two chemical tanks are carried, both properly valved and connected, so that one can be charged while the other is in operation, thus forestalling the possibility of exhausting solution at the critical time when a fire is about under control. The hose compartment easily accommodates 1000 ft. of standard fire hose, enabling the chemical stream to be quickly reinforced by water. Four speed transmission, foot accelerator and powerful brakes afford simple control.

The prices of the various chassea, including an equipment consisting of two oil dash lamps, tail lamp, horn, jack and set of tools, are $2750 for the one and one-half to two-ton truck; $3350 for the three-ton; $3650 for the four-ton, and $4350 for the five-ton. The chassis of the light delivery wagon sells for $1500 and special prices on the special delivery and chemical truck will be furnished on application.

KisselKar trucks and delivery wagons are built with all standard types of bodies. The KisselKar plant includes a large body-building factory and special bodies are designed and built for any special service or to incorporate the ideas of purchasers.

The Auto Sales Company, of Cleveland, O., has accepted the agency for the Buckeye trucks, manufactured by the Buckeye Manufacturing Company, of Anderson, Ind. The normal capacity of the car is one ton, but its heavy construction allows a considerable overload.

Kansas City, Kan., has decided to add two more combination hose reels and chemical engines on motor trucks to her fire department. The purchase was authorized by the city commission in response to recommendations upon the part of the firemen and demands from business men. The entire department will eventually be revolutionized, automobile apparatus superceding the old style machinery.

This is the latest addition to the fire equipment of Springfield, Mass. The commercial car is a battery vehicle made by the Couple-Gear Freight Wheel Company, Grand Rapids, Mich., while the hook and ladder wagon is an ordinary horse-drawn piece, with the front wheels removed. The speed of the combination is 30 m. p. h.

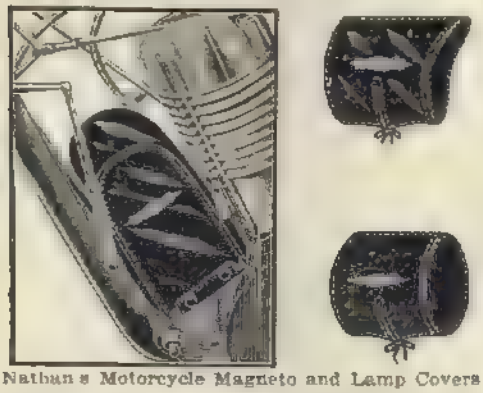
A LINE OF NEW MOTORCYCLE SPECIALTIES

We illustrate herewith some new things recently gotten out by the Nathan Novelty Mfg. Co., 84-90 Reade street, New York City, and which are of special interest to motorcyclists. In connection with winter riding the hand shields illustrated herewith

Nathan's Hand Wind Shields

should be especially serviceable. These shields prevent the wind from blowing up the sleeves and afford the greatest protection to the hands when riding in cold weather. Made in leather at $2.50 per pair and in heavy water proofed, arctic cloth, $1.50. Both styles are wool lined.

Nathan's Magneto Covers protect the magneto from water, mud and dust and especially the terminals. They are made of the best patent finished chrome tanned



Nathan's Motorcycle Magneto and Lamp Covers

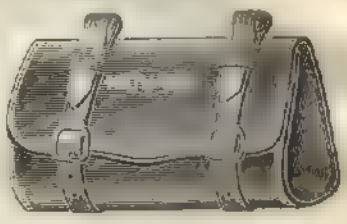
leather that can be washed off, also in leather finished duck. Leather finish 75 cents and in duck 50 cents.

The lamp covers are made for all styles and makes of lamps and are furnished in rubber cloth at 50 cents and in rubber finished cloth at 40 cents.

The Inner Tube Bags have been designed to fill a long felt want for a convenient means of carrying extra tubes on a motorcycle. These tubes are made of best quality enameled duck and have all necessary straps for securely fastening tubes and bags to the machine. It is made for one and two tubes listing at 35 and 50 cents respectively

Nathan's Inner Tube Carrier

Nathan's Motorcycle Tool Bags are made of sole leather and are strongly stitched. They hold a good quantity of tools and are



Nathan's Motorcycle Tool Bag

provided with straps to securely fasten them to the machine. The list price of the bag is 85 cents.

The Nathan Wind Guard and Skirt Protector should appeal to riders having a tandem attachment on their machine. This protector prevents the mud and dust thrown up by the rear wheel from reaching the rider. It also prevents the skirt or long

Nathan's Mud Guard and Skirt Protector.

coat from being caught in the spokes or belt. It is made of heavy brown Army Duck or Covert Mackintosh and is well finished. The edges are reinforced and have steel rod in same which can be bent so as to keep the protector entirely free from wheel and belt. It is fitted with all necessary brass eyelets so that it can be laced to the frame, and easily removed to permit cleaning. In Army Duck $1.50 and in Covert Mackintosh $1.75.

F. A. M. Membership Rapidly Increasing

The F. A. M. has increased its membership by 1,000 in four months. Mrs G. B. Gibson, the very necessary and helpful assistant secretary of the organization, was member No. 5,000 on October 1, 1910. On February 3, 1911, E. W. Rigg, secretary-treasurer of Gas Power Age, Ltd., Winnipeg, became member No. 6,000. Considering the winter months, this increase in membership is remarkable and indicates a busy time for Dr and Mrs. Gibson during the coming season.

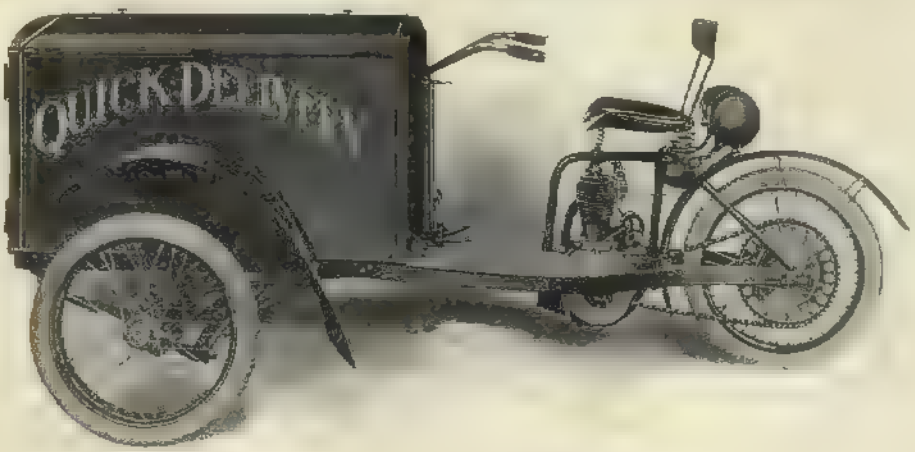
Oklahoma City now has a motorcycle club. The club was started with twenty-four charter members and Ora Schenck was elected president. There are over 150 riders in town.

The New Era Tri-Car

This machine, built by the New Era Auto-Cycle Company, of Dayton, Ohio, is designed especially for quick and economical delivery of small packages in cities and towns.

The machine is driven by a 6 h. p. single cylinder, air cooled motor. This is started by means of a crank similar to starting the motor of an automobile. The motor runs free, while the machine is at rest, and to start the operator takes his seat, presses his left foot on the slow speed lever and the Tri-Car starts at a speed of less than one mile per hour, and then by pressing the high speed lever he can speed the car up to thirty-five miles. The speed can then be varied to suit circumstances by adjusting the throttle by means of the grip control on the handle bar. The car can be slackened, or stopped, by merely pressing down the brake lever (with right foot), which is located on the foot board, thus throwing out the clutch automatically and applying the internal expanding brake, located in the rear hub. This is one of the exclusive features of this machine.

With the two-speed device it allows the operator to take any and all hills, no matter how rough or steep, and in case of the operator being compelled to dismount on any part of the hill, he may do so without stopping the motor and remount when he so desires, and reach the top of the hill without any additional labor on his part. The advantages of the slow-speed gear are also apparent when passing through a crowded street, as the machine can be driven at a mere walking gait.



The New Era Tri-Car.

The delivery box is 48 inches long, 24 inches high and 28 inches wide. Doors are fitted at the front and top. The box can also be furnished to specifications. The weight of the complete machine is 400 pounds. The wheel base is 72 inches. Wheels 20 inches in diameter are used, having 40 spokes, heavy gauge in each wheel.

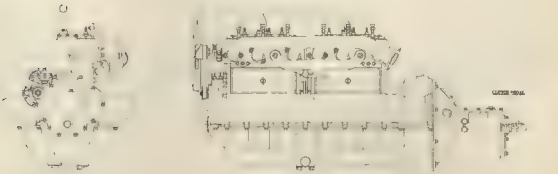
Corner of the Coliseum during the Pleasure Vehicle Show

PUBLIC SERVICE WAVERLEY ELECTRICS AT THE SHOW

One of the interesting features of the Chicago Commercial Auotmobile Show was the number of motor cars on exhibition that were designed in one way or another to perform public service. Among these were automobile 'buses, taxicabs, patrol wagons, hose and chemical wagons, etc., etc., of the gasoline type.

At the Waverley booth were exhibited a new type of electric ambulance, and what is said to be the first electric hearse ever built. The ambulance was built for Mr. Berton A. Spring, of Grand Rapids, Michigan, and the hearse for Mr. A. S. Bentley, 2221 Lincoln ave., Chicago

The Spring ambulance is a large and roomy vehicle thirteen and a half feet in



New Continental Six," showing unit power plant. Note compactness of cylinders obtained by casting in threes.

with a 5¼ in. stroke and a 4½ in. bore with a 5¼ in. stroke.

The cylinders are cast in threes and so permit the motor to be installed under a small hood. Three-point suspension is used. Another noticeable feature is the use of only three bearings as against four to seven bearings used in most six-cylinder motors Weight is not much greater than in a four-cylinder motor, because of these constructions.

The crank shaft is drop forged from special carbon steel. Connecting rod bearings are large and like crank shaft bearings are of nickel-babbitt.

A large centrifugal pump forces water through the liberal water jackets. Water enters the motor under the valves at the hottest points, thereby giving the best possible circulation.

Two positive plunger pumps, operated by camshaft eccentrics on either side of the middle cam shaft bearing, force oil under pressure to the timing gears and bearings. This oil drains back into the splash section which is divided by walls into four separate compartments. These walls naturally keep the oil from running to either end of the motor when on grades. Dippers assure a plentiful feeding of oil to all cylinders, giving a constant and even distribution. The splash compartment always maintains a constant level of oil, the overflow naturally returning to the oil tank to be again filtered and recirculated. A float indicator in an accessible place, registers the correct amount of oil.

The valve mechanism is totally enclosed by two metal covers, each one being held in place by a winged nut. These covers, which are easily removed, tend to quiet the tappet actions and also protect the valve mechanism from all dirt and dust. Valve stems and tappet rods practically operate in oil and are exceptionally quiet.

The cams are forged integral with the shaft from a single piece of low carbon steel, and, being hardened by heat treatment, are carefully ground and free from all chatter marks.

This motor is also furnished without flywheel housing and transmission assembly, as an independent motor. Supplying this motor as shown, in complete unit power plant, the makers furnish a Raybestos faced multiple disc clutch and a three-speed forward and reverse selective transmission.

NEW "NEWTONE" HORNS

The Automobile Supply Manufacturing Company, Inc., of 220-24 Taaffe Place, Brooklyn, N. Y., has recently placed two new models on the market of its "Newtone" horn, namely: Newtone torpedo type, listing at $20 and Type N, listing at $18.

The "Newtone" Torpedo Horn. Price, $20

The fields of the new motor are made up of 75 very thin disks of special steel. All moving parts of this horn are mounted on ball bearings. The brushes are self lubricating. Other models of this horn were described in our April, 1911 issue, page 172.

MILLER SECTIONAL VULCANIZER

The Miller adjustable sectional vulcanizer is intended for the either small or large repair work. It will, according to the makers, repair a 15 in. section at one heat, all sizes of bicycle tires, all sizes of motorcycle tires and all sizes of automobile tires, and at the same time repair from four to six automobile inner tubes at one time, as it has a machine flat surface 4 x 22 in. with movable clamps on either side. The great variety of sizes that this vulcanizer will handle is due to the fact that the back side of the vulcanizer is stationary and the front side is movable, so by tightening or loosening the two hand wheels you can

In the usual construction of steering gears the thrusts are taken by a worm and sector—gear and pinion, or similar device where line contact only is available, and the novelty of the Brown gear lies in the means employed to replace line contact with broad, flat, and circular surfaces so arranged that any force applied to the ball lever will react on these surfaces and at the same time so arranging the parts that a correct degree of reversibility or locking may be obtained.

Referring to Fig. 1 "D" is the casing or housing which is secured to chassis or subframe. "C" is the eccentric piece (revolvable) in casing through an angle of 160 degrees. "B" are check pieces which revolve in and with the eccentric piece "C." "A" is the ball lever shaft to which is secured the usual ball lever. The eccentric piece "C" is operated through a gear and pinion (not shown) by the usual steering wheel. As the steering wheel is revolved either to right or left, a corresponding movement is given to the eccentric and cheek pieces. These cheek pieces contact with the projection shown on the ball lever shaft "A" and it follows that any movement of the hand wheel will give a relative motion to the lever shaft; and as the ball lever is secured to this shaft, motion is transferred through the usual connection to the front wheels.

The degree of locking or irreversibility desired is secured by a proper location of the cheek pieces relative to the center of the eccentric piece "C,"—the nearer the cheek pieces are to the center the greater the locking effect. The parts can be so arranged that an absolutely uniform motion may be transmitted from the hand wheel through the working parts to the ball lever.

The E. M. Benford Co., of Mt. Vernon, N. Y., are for the eighth year exhibiting their well known line of Monarch Spark Plug and Timers.

The feature of their Spark Plug line for 1911, is their Monarch Magneto plug with an insulating core twice the thickness of an ordinary mica plug.

The E. M. Benford Co. are also putting out a special small timer which is guaranteed against wearing for three years. This can be used on Ford, Buick and Maxwell cars or any other make of car where there is no room for the regulation size timer The exhibit will be found in Space 419.

The Gus Balzer Co., of New York City, are exhibiting in Space 592, basement. Here will be found a full line of their automobile accessories. Radiator ornaments of every description are exhibited. Air-On-Tap, described in our November issue, page 202, is shown, as are two types of Hose Clamps. License plate holders, for front and rear, are exhibited, as well as universal license plates. Monograms in variety are shown.

THE "STEVENS" CARBURETOR AND IGNITER

The accompanying cuts illustrate the Stevens Carburetor and Igniter which are now being put on the market by the Gus Balzer Co., 1779 Broadway, New York, sole distributors for the United States and Canada.

The "Stevens" Carburetor

The carburetor has several features peculiarly its own. At low throttle all the air of the charge is restricted immediately around the jet; the throttle, gasoline, needle valve, and mechanical auxiliary air valve are connected together, and as the throttle is opened more gasoline is turned on and more air is admitted, and these proportions are kept constant through the different degrees of throttle opening. The carburetor is made in 1 and 1¼ inch connections and lists at $7.50 in polished brass finish.

The igniter consists of a combined timer and distributor, coil and switch. The coil

The "Stevens" Igniter.

is of the non-vibrating type. The synchronism is perfect, that is the waves of the primary and secondary coil follow one another, and the spark leaves at the peak of the electric wave when it is the strongest. The coil also has a large condenser.

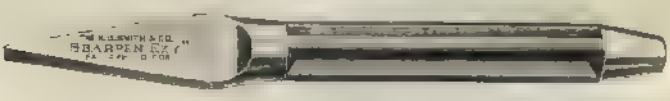
The combined timer and distributor goes on the shaft in place of the ordinary timer.

Bliven & Carrington, Inc., of New York City, are exhibiting in Space 534. Here will be found a quite useful accessory—the "E-Z-Way" Grease Gun.

New Grease Gun.

This will surely be appreciated by those who have performed the mussy operation of filling a grease gun, for it consists of grease container and gun in one. The can

The 'SharpenEzy' Cape Chisel



The 'SharpenEzy' Cape Chisel

The SharpenEzy Solid Punch

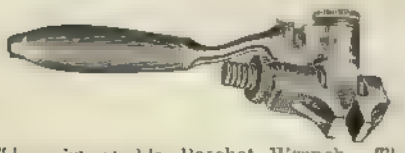
THE "SHARPENEZY" CHISELS AND PUNCHES

Herewith we show two styles of chisels and one style of a punch, manufactured by H. D. Smith & Co., of Plantsville, Conn. A feature of the chisels is the fact that the blades can be sharpened and ground down for years, just as the ordinary carpenter's chisel. This makes it extremely handy for the user to grind the tool as soon as it becomes dull, and also without resorting to special treatment or forging. The handle is fluted to prevent the tool from slipping around in the hand. The flat bladed chisel is manufactured in ⅜, ½, ⅝ and ¾ in. widths, and the cape chisel is made in ½ and ⅝ in. widths. The punch is manufactured in ½ and ⅝ in. sizes with 3-16 and ¼ in. diameter of points.

THE CONVERTIBLE RATCHET WRENCH

A feature of this wrench is the fact that it can be used in awkward corners and cramped spaces where it is impossible to use the ordinary wrench. It can be used in

The Convertible Ratchet Wrench

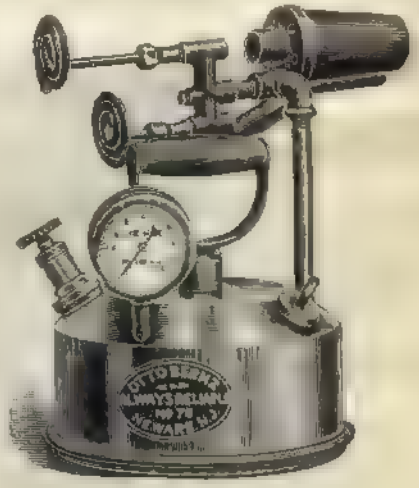


The Convertible Ratchet Wrench. This view shows the right or left action in addition to the ratchet feature.

32 different positions. The wrench is made of a special quality wrench steel and lists at $2 50, 8 in. size. A twirl of the thumb adjusts the wrench to any angle. It is manufactured by the Convertible Ratchet Wrench Co., Allentown, Pa.

BERNZ'S BRAZING TORCHES

Otto Bernz, of Newark, N. J., manufactures torches and brazing furnaces of every description, from the smallest alcohol vest pocket torch to the largest gasoline torch.



Bernz's No. 7 Brazing & Heating Furnace for Automobile Work

The accompanying cut shows a special model designed especially for the automobile trade, and can be used for heating heavy objects, such as the frames and axles while in place, thus making it unnecessary to take the part out of the machine. It can also be used for brazing.

"AUTO QUEEN" WRENCH SETS

The C. M. B. Wrench Co., of Syracuse, N. Y., manufacturers of adjustable handle, socket and ratchet wrenches, have recently placed on the market the "Auto Queen" wrench set for the purpose of meeting the demand of a cheaper set than their "Silver King." The "Auto Queen" includes sockets to fit all standard sized hex nuts from ¼ to ⅝ in., and square sockets from 3-16 to ⅝ in., and sockets to fit cap screws from ¼ to 9-16 in. It is made in two sizes, the smaller set listing at $4.00, while the larger set lists at $6 50.

The Lake District Endurance Run

Eleven perfect scores is the result of the Lake District Endurance Run which took place September 8-9-10 and which was the second annual endurance run of the Middle West F. A. M. district. Thirty-seven started in the run, while twenty-four finished. The daily run was about 200 miles, and while the run did not produce anything new mechanically, nevertheless it showed the standing-up qualities of the two-wheeler and its ability to put it all over the average motorcar. This was exemplified by the manner in which the tire cars behaved. On the first day's run one of the two tire cars broke down, while on the third day the other car was disabled by an accident. Both cars had the worst time keeping anywhere near the motorcycles.

The men were sent away Friday morning at 5.30 while the sun was still napping. The U. S. tire car started out with the first of the bunch, while the Goodyear car followed up the rear. The Indian team consisting of A. H. Crockers, 7; S. W. Nicholson, two-speed 7; and R. W. Du Sell, 7, won the trade rider contest, securing the Chicago Examiner Cup, the Riverview Motordrome Cup and F. A. M. gold medal. Arthur T. Barlass, a Chicago manufacturer of creamery machinery, etc., who uses his 7 Indian daily, won the private-owner high honors—the Chicago American Cup—by the process of elimination, as he won by having the only private-owner perfect score on the last day at the Milwaukee noon control, and the F. A. M. gold medal which he won by having the only private-owner perfect score at the finish. Going some, eh!

The Indian team finished perfect, plus 9 points gained over the Thor team in the secret control elimination, between this and the Thor team, for the cup. The Thor team consisting of T. S. Tormey, Harvey Bernard and M. W. Graves, all on single-cylinder 4 h. p. machines, finished perfect, but lost 9 points in the cup contest. They receive the F. A. M. gold medals. The Yale team scored a total of 2,295 points. Chubbuck and Oberwegner each had 1,000 points, while Ingram lost five on account of coming in late at the Rockford noon control the second day, thus eliminating the team from the cup contest by a slight margin. The Pierce team received a total of 1,974 points; the New Era team 987 points, and the North Shore M. C. Club 2,772.

At Seatonville, 114 miles from the start, on the afternoon of the first day, a hill climb was held. All but two of the contestants mounted the hill, which is about half a mile long, with a 5 to 20 per cent. grade, and lots of deep gravel half way up.

CONTESTANTS IN THE LAKE DISTRICT F. A. M. THREE-DAY, 570-MILE ENDURANCE RUN, CHICAGO-DAVENPORT-MILWAUKEE-CHICAGO, SEPTEMBER 8-9-10, 1911

Rider and City.	Class.	Machine.	h. p.	Transmission	Ignition.	Tires.	Score
J. A. Turner, Chicago	Private	Merkel	6	V Belt	Magneto	M. & W.	972
A. T. Barlass, Chicago	Private	Indian	7	Chain	Magneto	M. & W.	1000
A. Curtis, Chicago	Private	Merkel	7	V Belt	Magneto	Empire	Out
W. W. Ingram, Rutland, Ill.	Trade	Yale	4	Flat Belt	Battery	Cont-Erie	995
A. R. Oberwegner, Toledo	Trade	Yale	4	Flat Belt	Magneto	Cont-Erie	1000
S. J Chubbuck, Toledo	Trade	Yale	4	Flat Belt	Battery	Cont-Erie	1000
W. G. Lauterbach, Men., Ill.	Trade	Yale	4	Flat Belt	Magneto	Goodrich	838
H. A. Carlson, Chicago	Private	Indian	7	Chain	Magneto	Goodyear	Out
G. H. Crocker, Chicago	Private	Indian	5	Chain	Magneto	M. & W.	*845
A. H. Crocker, Chicago	Trade	Indian	7	Chain	Magneto	Goodyear	1000
S. W. Nicholson, S. Bend	Trade	Indian	7	Chain	Magneto	M. & W.	1000
R. W. Du Sell, Aurora	Trade	Indian	7	Chain	Magneto	M. & W.	1000
J. S. Kief, Chicago	Private	Excelsior	6	Flat Belt	Magneto	M. & W.	897
R. H. Firkins, Chicago	Trade	Excelsior	6	Flat Belt	Magneto	Goodyear	1000
A. Huber, Chicago	Private	Indian	7	Chain	Magneto	M. & W.	Out
W. Redington, Chicago	Private	Indian	7	Chain	Magneto	M. & W.	Out
T. R. Isbell, Milwaukee	Private	Harley-D	4	Flat Belt	Battery	Goodyear	Out
W. S. Harley, Milwaukee	Trade	Harley-D	4	Flat Belt	Magneto	Goodyear	Out
G. Puls, Milwaukee	Trade	Harley-D.	4	Flat Belt	Magneto	Goodyear	1000
E Becker, Milwaukee	Trade	Harley-D.	4	Flat Belt	Magneto	Goodyear	975
C. McCabe, Chicago	Private	Thor	4	Chain	Magneto	M. & W.	929
M. N. Graves, Chicago	Trade	Thor	4	Chain	Battery	Cont-Erie	1000
H. Bernard, Chicago	Trade	Thor	4	Chain	Battery	Cont-Erie	1000
J. S. Tormey, Chicago	Trade	Thor	4	Chain	Battery	Cont-Erie	1000
P. Zons, Chicago	Private	Thor	4	Chain	Magneto	G & J Gdyr	972
D. Popini, Chicago	Trade	Thor	4	Chain	Magneto	M. & W.	999
W. T. Graves, Chicago	Private	Thor	4	Chain	Battery	M. & W.	980
J. R. Purdy, Chicago	Private	Harley-D.	6	Flat Belt	Magneto	Empire	Out
R. R. Hill, Chicago	Trade	New Era	4	Chain	Magneto	Goodrich	Out
I F. Jacobs, Dayton	Trade	New Era	4	Chain	Magneto	Goodrich	Out
C. B. Hull, Dayton	Trade	New Era	4	Chain	Magneto	Goodrich	978
A. G Parsons, Milwaukee	Private	Thor	6	Chain	Magneto	M. & W.	Out
J. J. Stark, Milwaukee	Private	Merkel	4	V Belt	Magneto	Goodyear	Out
F. Juergens, Hammond, Ill.	Private	Thor	4	Chain	Battery	M. & W.	Out
E. R. Durkee, Buffalo	Trade	Pierce	†7	Shaft	Magneto	Goodrich	Out
H. G. Pohl, Buffalo	Trade	Pierce	5	Flat Belt	Magneto	Goodrich	946
W. J Mensch, Buffalo	Trade	Pierce	5	Flat Belt	Magneto	Goodrich	928

* Disqualified. † 4-cylinder. The contestants' names are in the order in which they entered.

Two secret controls helped to make things interesting. The first was 32.5 miles from Milwaukee, while the next was 8.3 miles beyond Algonquin. A puncture in one of the tires of the car carrying the contest committee decided the checking place.

The run was accompanied by all sorts of weather conditions and roads. On the homeward trip, the third day, the riders met with rain about 50 miles out of Chicago and all were drenched by the time they reached the city. They showed that they had traveled some, and most of them had kept very close to schedule.

NEWARK TO ATLANTIC CITY RUN

Eighteen of the twenty-three starters finished with perfect scores in the Newark to Atlantic City twelve-hour endurance run held on September 4, under the auspices of the New Jersey Motorcycle Club. Three of the starters were women, and two finished. Howard Hill, the road captain, hit it up a bit —and had to fork over twenty-five simoleons to the Atlantic City police.

F. A. M. STILL GROWING

The F. A. M. is still growing and expects to keep it up. New members enrolled during August are: New Hampshire, 1; Massachusetts, 12; Rhode Island, 5; Connecticut, 7; New York, 44; New Jersey, 8; Pennsylvania, 28; Maryland, 11; District of Columbia, 5; South Carolina, 2; Georgia, 1; Florida, 9; Alabama, 17; Ohio, 135; Indiana, 24; Illinois, 76; Missouri, 1; Wisconsin, 32; Michigan, 7; Arkansas, 18; Texas, 20; Kentucky, 3; Minnesota, 35; South Dakota, 1; Nebraska, 3; Kansas, 7; Iowa, 14; California, 18; Colorado, 40; Arizona, 1; Montana, 1; Oregon, 1; Washington, 5. All these together added 592 names to the F. A. M. list.

Renewals by districts were: Northeastern, 10; Atlantic, 44; Peninsular, 2; Lake, 49; Central, 21; Gulf, 4; Southwestern, 3; Pacific, 1. Total, 134.

Oklahoma knows how to fix 'em—that is —the open muffler fiends. Fines them $5 to $100. Good work.

Frank P. Gravatt, 31 North Florida Street, Atlantic City, N. J., has been appointed Atlantic County agent for the Flanders motorcycle. He is a well known rider in his district and recently made a mile on the boardwalk with a single cylinder machine in 57 2-5 seconds.

The McLean County M. C. has recently been organized in Bloomington, Ill., with eleven members on its roster. A business and a social meeting will be held each month. C. A. Fenn, is president; F. Neil, vice-president; A. Wellmerling, secretary-treasurer; E. Erdmann, captain; M. House, first lieutenant, and J. Reed, second lieutenant.

LABOR DAY MEET AT DETROIT

Hart and Teubner were the stars at the Detroit M. C. Labor Day meet at the State fair grounds mile track. Hart hung up a new record for five miles, doing the same in 4:26. Hart and Teubner each won three firsts. The meet furnished some high spirited racing for the 3000 spectators. The most exciting event was the 10 mile open for single cylinder machines, Teubner and Hart fighting it out all the way. Teubner's work on the turns and back stretch enabled him to pull in two lengths ahead at the finish. Summaries:

Five miles, open, 30.50 class—W. J. Teubner, Merkel; Don Klark, Indian; Frank Hart, Indian. Time, 5:01 1-5. **Three miles, novice,** private owners, 61.00 class—Chamberlain, Indian; Brydon, Indian; Dogherty, Indian. Time, 3:14 4-5. **Ten miles, open,** 30.50 class—Teubner, Merkel; Hart, Indian; Welsman, Merkel. Time, 10.19 2-5. **Five miles, open,** 61.00 class, rolling start—Hart, Indian; Teubner, Merkel; Oberwegner, Yale. Time, 4:28 4-5. **Miss and out race,** five miles—Teubner, Merkel; Klark, Indian; Hart, Indian. Time, 5:02 3-5. **Ten miles, handicap**—Hart, Indian, scratch; Mahon, Indian, 1 min.; Logan, Merkel, scratch. Time, 9 04 **Novelty obstacle race** Don Klark, Indian, Hart, Indian. Mahon, Indian. **Twenty-five miles,** 30.50 class —Weitzman, Merke.., Mahon, Indian; Shattock, Emblem. Time, 27 23 **Twenty-five miles,** 61.00 class—Hart, Indian, Logan, Merkel, Oberwegner, Yale. Time, 22 51 2-5.

Oklahoma City motorcyclists are being envied. No wonder; when they have a 30-mile boulevard circling the city, with no speed limit upon this drive.

The Bluegrass M. C., of Lexington, Ky., recently held a 100-mile reliability run. About 100 riders participated, nine of them finishing with perfect scores.

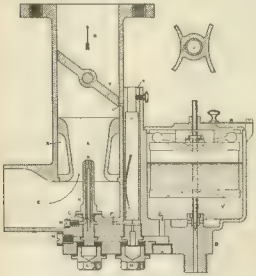
The Columbus, O., M. C. recently leased for a period of five years, a large eight-room brick dwelling to be used as a club house by its members. A large stable in the rear has been overhauled for a garage for motorcycles. Bowling alleys and billiard tables are being installed. One of the features of the equipment will be a number of shower baths.

New motorcycle clubs affiliated with the Federation of American Motorcyclists announced are: Lima, O., Motorcycle Club, W. M. Thomas, secretary; Bakersfield, Cal., Motorcycle Club, D. F. Lightner, secretary; Staten Island Motorcycle Club, West New Brighton, N. Y., S. Christopher, secretary; Hagerstown, Md., Motorcycle Club, R. L. Zimmerman, secretary.

J. H. Sager, of Rochester, N. Y., recently patented a new shock absorbing spring frame for motorcycles and bicycles. The frame is jointed at the crank hanger, allowing motion of the rear stays, and springs contained in the upper frame tube absorb the shocks. Springs are provided for both direct shock and rebound.

THE ZENITH CARBURETOR

Tackling the problem of keeping a constant ratio of air to gasoline in exactly the reverse way, as is usually done in carburetors, the inventor of the Zenith principle uses a compound gasoline nozzle; the inner one "C" is fed in the usual way, that is directly from the float chamber; the outer one receives its gasoline from well "J" after it has been measured out by the compensating hole "I." As the well is open into the atmosphere, and not subjected to the vacuum, the hole "I" has a constant flow per minute and supplies gasoline to the ring-shaped outer nozzle in a quantity inversely proportioned to the speed of the engine.



The Zenith Carburetor.

The makers claim that by the introduction of this "time element" to do away with the tendency of an ordinary nozzle to give too rich a mixture at high speed, and that even by overcompounding, the carburetor can be made to deliver a poorer mixture as the speed increases, thus doing away with another air opening in the manifold. They claim also permanency of adjustment, due to the absence of moving parts, better pick-up and hill-climbing power and easy starting. The last feature is due to an automatic priming device consisting of a by-pass, opening at "U" near the butterfly, by which a charge of gasoline is sucked up when starting.

These carburetors, which are widely known in Europe, are put on the market by The Zenith Carburetor Company, of Detroit, Mich. They are new in America, but are already well known in advanced engineering circles.

ARSENAL LIQUID GUN METAL

This preparation, applied with a brush like paint or varnish, makes a lasting gun metal enamel on all brass parts, and at the same time may be removed at any time without injury to the article. This will be of especial value to owners wishing to change their lamps, fenders, etc., from polished brass to a dark finish.

The preparation is made by the Arsenal Varnish Company, 2501 Fourth Ave., Rock Island, Ill.

V-RAY SPARK PLUG

Shown in the accompanying cut is the V-Ray spark plug for use in automobiles, gasoline launches, aeroplanes and stationary engines. The V-Ray is manufactured by the Marshalltown Motor Material Manufacturing Company, of Marshalltown, Ia.

The V-Ray is manufactured in every conceivable size and form to meet every requirement. It has attached to it an automatic self-cleaning device, and has adaptations for every terminal that has been brought out in motors of every description, combined in the one terminal cap.

V-Ray Spark Plug.

THE EVERGREEN TIRE PROTECTOR

This protector is inserted between the inner tube and the shoe, and, it is claimed, makes the tire absolutely puncture proof, protecting it from every injury and making blow-outs impossible. The protector is made of a composition of an intertwined fibrous material, the interstices being filled with pure rubber, so that it is not only light and tough, but retains the spring and resiliency of pure rubber. The protector contains no metal, and is light in weight. They sell for from $6.60 each for the 28 x 2½ in. size, to $13.75 for the 40 x 6 in. size. They are for sale by John Peyser's Sons, 258 Broadway, New York City.

the goods the simplest and easiest of all problems of merchandising. Either solid or pneumatic tires may be used on this car. There is sufficient battery power and motor energy to carry the loaded wagon at a speed of ten, twelve or fifteen miles an hour for a distance of from 50 to 75 miles on one charge.

The capacity of the car is sufficient for any class of merchandise that in shipping to another city would ordinarily go by express. The size of the car permits of its being run into the shipping room of any store, kept there when not in use, or charged there if a proper charging apparatus is installed. The absence of mechanical difficulties or complexities permits its being operated by any bright youngster that can be trusted properly to deliver goods.

NEWARK TO BOSTON BY ELECTRIC

Recently the Lansden Company, of Newark, N. J., delivered one of its 1-ton electric wagons to its representative in Boston, under its own power. The run was made not for the purpose of doing any "stunt," but simply to emphasize the present possibilities in the use of electric commercial vehicles. Several stops were made during the run and demonstrations given to prospective purchasers. Charging stops were made at New Haven, Conn., Springfield and Worcester, Mass. Fair roads were encountered all the way except for a bad stretch of 1½ miles going into Springfield. The truck is equipped with an Edison battery.

TRUCKS IN FRENCH MANEUVERS

During the recent French army maneuvers on the plains of Picardy, motor trucks were used to a great extent, and the superiority of their service over that of horses created a powerful impression on French and visiting experts. One feat that attracted much praise was the victualling of the 30,000 troops by a fleet of 30 commissary trucks.

BAN ON TRUCKS REMOVED

As a result of the efforts of the N. A. A. M. insurance companies have withdrawn the restrictions whereby gasoline trucks were denied admittance to steamship piers in New York City. Some time ago the insurance companies established a rule, adding 50 per cent. to the premiums for piers if gasoline trucks were admitted. This resulted, of course, in their being excluded, and the refusal of many firms shipping from piers to use motor trucks. With the removal of the ban, however, no doubt these firms will be glad to purchase the motor equipment which means speed, safety and economy of operation.

WEBER TO BUILD A TRUCK

The M. Weber Co., of Dayton, Ohio, is getting ready to build a light truck for grocery and parcel delivery, to be known as the "Weber." A new building, 40x82, of concrete and steel, affording 10,000 feet of space, is being erected. It will be equipped in the most modern fashion.

A White Truck With New Dumping Body.

The White Co., of Cleveland, Ohio, has designed the illustrated truck with dumping body, which is being used by McDonald & Barry in hauling ashes from a power house on the Harlem River at 224th street to a new street which is being filled in at Broadway and 240th street. The truck carries a load of seven cubic yards of ashes a distance of over a mile. In comparison with horses, the regular teams which have been used on this work have been hauling three and a half cubic yards to a load. The daily trips average from five to six trips—the truck has been carrying twice as great a load and has averaged from ten to twelve trips or double the number of trips. In other words, has easily done four times the work, or taken the place of four horse drawn wagons.

$6. Instead of $300. to $600.

Saves You Money and Time and Insures a Continuous Delivery Service.

That's what we positively guarantee to all purchasers of Grabowsky cars—and the reason we can is the car itself, its perfection in every detail of construction and its many seen-at-a-glance exclusive features which place it in a class of its own. We can prove that it requires the minimum of care, that its upkeep cost is less and that it is a guarantee of cheaper and better continuous delivery service. For instance:

Every working connection in a Grabowsky, subjected to even the slightest wear, is protected by tight-fitting hardened steel bushings. There are 38 of these and the entire number, when worn from normal use, can be replaced at a small cost not exceeding $6.00. To replace similar connections on any other commercial car would cost from $300 to $600 as replacements would consist of whole parts or entire sections.

Other Exclusive Money Saving Features

that go together to make the Grabowsky the master power wagon of the world.

Grabowsky Power Wagons

Designed and manufactured under the personal supervision of Max H. Grabowsky, the acknowledged master of commercial car building.

The power plant is removable, pulls in and out like a drawer, permitting of frequent inspection or necessary adjustment without loss of time or delay in service—actually quadrupling the efficiency. The lubrication system is wonderful and means a great saving—by use of hydraulic pumps and filters the same oil is used over and over again—using less than any other car.

This is but one of the many reasons why "Grabowsky construction" means not only a tremendous saving of time and money and a guarantee of almost continuous service, but the prolonged life of the car. Every detail of Grabowsky construction is given the same painstaking care and attention.

We can't tell the whole story here, so write, stating what comprises your present delivery system and we'll explain just why the Grabowsky means "better service at less expense."

Dealers Everywhere: Handle The Grabowsky. Its superiority is seen at a glance. The demand for it is enormous—you can't lose to talk in circles when you show The Grabowsky, you can talk facts. Selling territory is being allotted daily—write for our liberal agency terms.

The Grabowsky Power Wagon Co.,
1755 Mt. Elliot Avenue,
Detroit, Mich.

Most Perfect Power Wagon

Your Delivery Problems Solved by the Atlas!

Economy in Delivery by Motor Cars

The gasolene motor delivery wagon is the Twentieth Century method of delivery—the means of cutting down overhead expense and increasing the percentage of profit.

You want a car which will require the minimum of expense in operation—**simplicity** (to reduce repair bills), **reliability** (to insure constant dependable service)—a car that can be driven by some one less than a mechanic. That car is the perfected two-cycle Atlas Delivery Wagon.

ATLAS TWO-CYCLE ENGINE

The Atlas motor is a two-cycle 20 H. P. engine. The Atlas motor has only five (5) moving parts—two pistons, two piston rods and one crank-shaft. Mark you! **No valves!** Just compare that to the four-cycle engines in other cars, with sixteen parts to each cylinder.

Sixteen in each cylinder—in four-cycle engines.

Five only in the **whole Atlas Engine**

Each of them big and strong and reliable—seldom, if ever, giving trouble—built to last.

60% to 75% More Power

The Atlas Engine in this delivery wagon will do more work, cylinder for cylinder, than any four-cycle engine of corresponding size. In the Atlas a power impulse is obtained from EVERY stroke of the piston. In a four-cycle engine a power impulse is obtained only every other piston stroke. That's the difference between two-cycle and four-cycle construction. That's why the Atlas will develop 50 to 75% more power than any four-cycle engine of equal size.

The Atlas Engine is non-adjustable. With its doubly fast impulses vibration is reduced to a minimum.

The Atlas will save your repair bills, high-priced skilled drivers' salary and the aggravation of interrupted service. It is the solution of your delivery problems.

ATLAS CONSTRUCTION. Every part of the chassis is made in the Atlas factory at Springfield, Mass., supervised by the designer himself. No expense is spared to put the very best material obtainable into the car—to turn out a car which is 100% perfect. It will save you money over your present delivery methods. Send for our catalogue. Let us demonstrate the ability and power of this car.

20 H. P. Delivery Wagon, $2000 20 H. P. Taxicab, $2,400

THE ATLAS MOTOR CAR COMPANY

New York Office, 2010 Broadway
100 Birnie Avenue, Springfield, Mass.

The Knox Line

Our extensive experience in this line of business has led to the development of a type of vehicle to meet every known service. We are prepared to furnish all sizes of wagons, trucks, omnibuses, ambulances, patrol wagons, trolley service wagons, sight-seeing vehicles and motor driven fire apparatus. Seven standard chasses, bodies for any business.

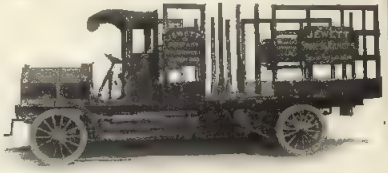
KNOX AUTOMOBILE COMPANY

Licensed Under Selden Patent

SPRINGFIELD, MASS.

The Atterbury

Commercial Car



PRONOUNCED THE WORLD'S STANDARD—AS WE ARE THE OLDEST MANUFACTURERS OF TRUCKS AND DELIVERY WAGONS IN AMERICA. THIS LONG EXPERIENCE MEANS FOR YOU THE MAXIMUM OF SATISFACTION. OUR CATALOGUE IS JUST BRIMFUL OF INTEREST,—MAY WE SEND IT?

ATTERBURY MOTOR CAR COMPANY, Buffalo, New York

$6. Instead of $300. to $600.

Saves You Money and Time and Insures a Continuous Delivery Service.

That's what we positively guarantee to all purchasers of Grabowsky cars—and the reason we can is the car itself, its perfection in every detail of construction and its many seen-at-a-glance exclusive features which place it in a class of its own. We can prove that it requires the minimum of care, that its upkeep cost is less and that it is a guarantee of cheaper and better continuous delivery service. For instance:

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Other Exclusive Money Saving Features that go together to make the Grabowsky the "master power wagon of the world."

Grabowsky Power Wagons

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The power plant is removable, pulls in and out like a drawer, permitting of frequent inspection or necessary adjustment without loss of time or delay in service—actually quadrupling the efficiency. The lubrication system is wonderful and means a great saving—by use of hydraulic pumps and filters the same oil is used over and over again—using less than any other car.

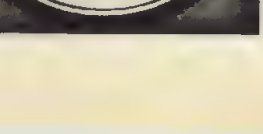
This is but one of the many reasons why "Grabowsky construction" means not only a tremendous saving of time and money and a guarantee of almost continuous service, but the prolonged life of the car. Every detail of Grabowsky construction is given the same painstaking care and attention

GRABOWSKY SERVICE GUARANTEED AS TO WORKING

We can't tell the whole story here, so write, stating what comprises your present delivery system, and we'll explain just why the Grabowsky means "better service at less expense."

Dealers Everywhere: Handle The Grabowsky its seen-at-a-glance superiority makes it the logical car—the demand for it is enormous—you don't have to talk in circles when you show The Grabowsky, you can talk facts. Selling territory is being allotted daily—write for our liberal agency terms.

The Grabowsky Power Wagon Co.,
1755 Mt. Elliot Avenue, Detroit, Mich.



60% More Power
With Only Five Moving Parts

SIMPLICITY! *There's* the answer!

Analyze your delivery wagon troubles—your delays—your repair bills.

Diagnose the symptoms. Discover the cause. Put your finger on the trouble-center

You'll land on the *motor*. And here's what you'll find:

Mixed-up, tricky, complicated construction—a maze of frail, delicate, highly nervous moving parts—difficulty of adjustment—difficulty of operation.

In other words, lack of *simplicity!*

Of course your power wagons keep on going wrong.

And *that's* why you'll be glad to know of

ATLAS
DELIVERY WAGONS

The Atlas Motor has only five (5) moving parts! The four-cycle engines on other wagons have from 75 to 150 moving parts.

The Atlas has no valves. Merely two pistons, two piston rods, one crank shaft.

More Power—Less Cost

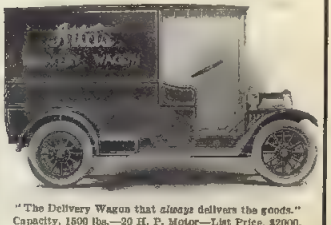
Yet this astonishing engine does *more* work, *better* work, *cheaper* work than any four-cycle engine of equal size.

For the Atlas gets a power-impulse from *every* stroke of the piston while the four-cycle engine gets a power-impulse from only every *second* stroke.

So the Atlas gives you 60% to 75% more actual power than the same size four-cycle motor

This is only the *start* of the Atlas story.

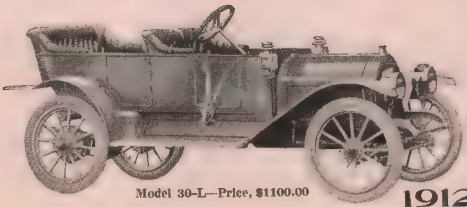
Send for the Atlas book. Learn why it costs less to keep and less to run. Learn how it saves tires and why it outwears any other delivery wagon you can buy. And get the *proof*. Send for the book. Write us right now.



"The Delivery Wagon that *always* delivers the goods."
Capacity, 1500 lbs.—20 H. P. Motor—List Price, $2000.

ATLAS MOTOR CAR COMPANY
Licensed under Selden Patent,
100 Birnie Ave., Springfield, Mass.
2010 Broadway, N. Y.

Auburn



Model 30-L—Price, $1100.00

1912

"The Most for the Money"

Absolutely the best in motor car construction at the price, $1100.

Simplicity, dependability, economy, are the keynotes in the construction of the Auburn.

No taint of cheap construction can be found in any part of an Auburn.

The materials used in its construction are the very best obtainable, and this, combined with the high-class mechanical skill employed, makes the Auburn mechanically perfect.

Auburn cars are suited for all classes from the business man's runabout to the large touring car—all equipped with a "troubleless" power plant—RUTENBER MOTORS.

The more you see of the Auburn the more you know of the high quality of the materials from which it is constructed and the accurate workmanship employed.

A roomy, luxuriously appointed car with quality.

Compares in endurance, speed and luxury with the highest priced American cars.

The 1912 Auburn, in size and appearance, answers the requirements of the most critical.

We build Auburn cars for those who want a car that stands out "distinctive."

The 1912 Auburn embodies all the advanced improvements and utilities at a price you can afford to pay.

Auburn cars built ten years ago and constantly in use are still giving first-class service, which is proof conclusive that the Auburn cars are the cars that last.

It is not the price that counts, it is the quality of the car!

Quality gives the best satisfaction to the owner, and you will quickly recognize quality in every line of the Auburn.

Model 6-50, 135" Wheel Base	$4000
Model 40-N, 120" Wheel Base	1750
Model 35-L, 115" Wheel Base	1400
Model 40-M, 120" Wheel Base	1750
Model 40-H, 120" Wheel Base	1650
Model 30-L, 112" Wheel Base	1100
30-L Roadster, 112" Wheel Base	1100

We Shall Exhibit at

Grand Central Palace Show
January 10-17

and

Chicago Show
February 5-10

Catalogue ready and some desirable territory open for wide-awake, hustling agents.

Visit our Exhibit at the Grand Central Palace Show, New York, Space M-41-R-F, January 10th to 17th, 1912, and the Chicago Show, January 27th to February 10th.

Auburn Automobile Co.
Auburn, Indiana

For Automobile Lighting
Now Ready

All Standard Makes of Tanks Refilled and Exchanged

REFILLING STATIONS: Chicago Ill. Philadelphia (Camden) Kansas City, Mo. Warren, O.
Detroit, Mich. Buffalo, N. Y. Dallas, Tex
Refilling stations in other cities being erected Exchanges everywhere

Guaranteed Greater Number of Hours' Lighting, Purer Gas, Scientifically Prepared Solvents.
Full lighting hour service by weight of actual gas; not merely gauge pressure.

THE SEARCHLIGIIT GAS COMPANY, GENERAL OFFICES: 325 Michigan Blvd., Chicago, Ill.

The Guiding Star for all Who Want a Safe and Satisfactory Lubricating Oil

What wouldn't you give for an automobile lubricating oil that would not carbonize, that would not thicken up in the winter or thin out in the summer, that would lubricate your cylinders perfectly under all and all conditions, an oil that you could depend on at all times.

EMCO No. 300 is just this kind of an oil.

Don't take our word for it, ask those who have used it, or better still, try it at our expense on your own car, in your own way.

If you find what we say true, continue to purchase it, if not, and you are dissatisfied for any reason whatever, return the oil to us and receive your money back. We will pay freight both ways on any oil returned and make no charge for ten gallons used in the trial.

Surely a fair proposition.

We own the largest independent refinery in the world and have had forty years' experience in the oil business, and when we say that EMCO No. 300 Automobile Oil is the cream of all automobile oils we mean it and stake our reputation.

[illegible]

EMERY MFG CO.

BRADFORD, PA.

POWER WHEN YOU NEED IT

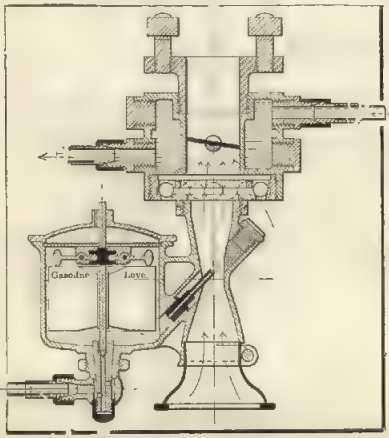
is combined with economy and flexibility in the

POSITIVE AUTOMATIC

CARBURETTOR

G. & A.

Note the simple automatic features, also straight line entrance of mixture.



Money refunded if not satisfactory after 30-day trial.

A. J. MYERS, Inc., Sole Owners U. S. Patent Rights 244 W. 49th Street, New York

All persons are cautioned against infringing on the ball cage for the intake of auxiliary air.

Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World

NEW PRICES

In Effect

September 1st

Write for Schedule A

MAGNETO & MICA TYPES ..... VESUVIUS & STANDARD TYPES

SHOOTS A FLAME HOT AS THE FIRES OF VESUVIUS
IGNITES THE CHARGE ENERGETICALLY AND UNFAILINGLY

Energetic Ignition **Greater Power**

Dealers and jobbers beware! We protect our trade mark
PACKED IN THIS BOX FOR YOUR PROTECTION

DON'T BUY IMITATIONS.

A. R. MOSLER & Co. 163 W 29TH ST. NEW YORK

Enjoy Your Car at Night

You can't do it unless you have confidence in your lamp equipment.

And thousands of motorists will tell you that you can't have absolute confidence in your lamp equipment unless it consists of

Solar Lamps

Most of the high-grade American cars are regularly equipped with Solars.

Thousands of other motorists use them as the result of experience.

Don't be satisfied with less.

Our descriptive catalog is free.

Badger Brass Mfg. Company

Kenosha, Wis.
New York City

(87)

AUBURN 1911

"The Most for the Money"

Model N—$1750

Do All Motor Cars Look Alike to You?

No, of course not, but have you learned to designate between the car of real looks and **the car of real quality?** It's that real quality underlying the exterior of AUBURN CARS that commends them to the man who wants real automobile comfort and not automobile worry.

There's all the difference in the world in the kind of satisfaction owners obtain from their cars and the amount of satisfaction is not proportionate to the original price of the car. **It is not the price that counts, it is the quality of the car,** and it's the quality that gives the highest satisfaction to the owner. Quality is incorporated into every part of the AUBURN 1911.

And the looks of the AUBURN as well simply command the attention of those thinking of purchasing an automobile. **In the whole wide field of automobiles made in the United States, there is not another single example of a car with such well-proportioned size, such refined lines, and such superior finish.** The men who admire motor cars for their looks and who are attracted by the car of luxury as it moves along the street are invariably attracted by the AUBURN; and the man who appreciates motor cars most for the good mechanical qualities they contain looks with wonder at the marvelously well-designed and finished construction, and looks with admiration at the unique and highly creditable performances of AUBURN CARS.

We have taken great pride in the splendidly preserved appearance of AUBURN CARS that have been in constant use for several years. AUBURN CARS are the cars that last. You do not need a new car every season, for every piece entering an AUBURN CAR and every inch of finish is as thoroughly and carefully carried out as if the AUBURN were a five thousand-dollar car. But the AUBURN is a forty-horse power car with fore-door body for $1750.00

For looks, for durability, for hill-climbing, for general usefulness at the price asked, AUBURN 1911 cars are absolutely unequaled. The magnificent record for durability, economy and satisfaction behind AUBURN CARS together with their elegant looks and their unusually low price furnish evidence uncontrovertible and unchallenged.

Read over these 1911 specifications if you have any doubts:

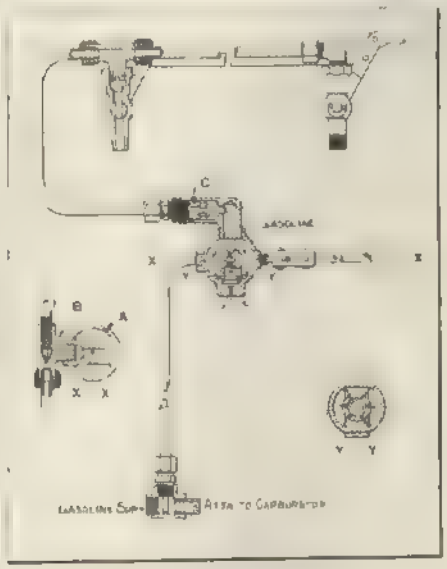
Motor—four cylinders, 4½ x 5; 5-bearing crank shaft, 36" wheels.
Hess-Bright Ball Bearings in transmission.
Chrome tanned leather faced cone clutch.
Semi-elliptic front springs, ½-scroll elliptic rear.
Selective transmission, 120" wheel base.
Shaft drive with bevel gear differential.
Painted royal blue or battleship grey.
STANDARD EQUIPMENT:—3 oil lamps, 2 gas lamps with generator, jack and full set of tools; Ramy magneto.
PRICE: $1750.
The chassis mounts touring, close-coupled and roadste bodies.

Model L "30," on same general lines and construction as N, 112" wheel base; 34" wheels, $1400.00. Models G & K, $1000.00

CATALOGS READY. SOME OPEN TERRITORY FOR THE RIGHT MEN

AUBURN AUTOMOBILE COMPANY, AUBURN INDIANA

into the intake manifold and thereby priming the engine continuously while it is being cranked. This atomizing nozzle is connected with the gasoline supply pipe and has a needle valve (B) which, when opened,



The Triplex Facilitator

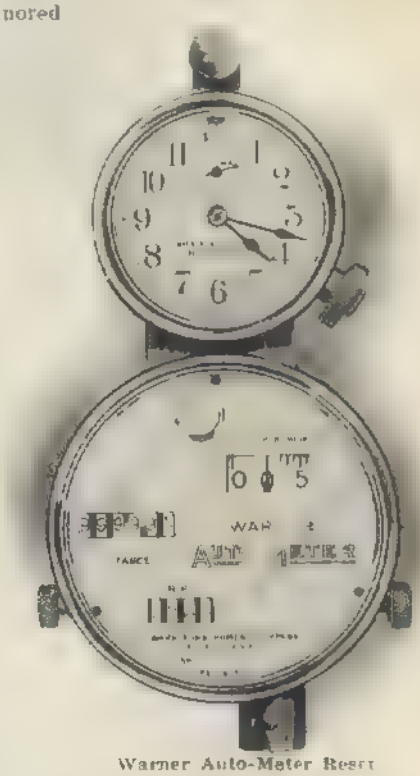
allows gasoline to enter, and this nozzle is of such construction that the released air passing through will atomize even the lowest grades of gasoline, and as the vapor is immediately carried into the sucking cylinder it is given no time to condense even in the coldest weather. It is also provided with a valve (C) which closes automatically when an explosion occurs in the cylinders and prevents burned or burning gases from entering the intake manifold. It is easily attached to any engine equipped with relief cocks, and may be fitted to those not so equipped by the use of special spark plugs

The Triplex Facilitator is made by A. M. Welstrom, 854 Security Bank Building, Minneapolis, Minn. For one or two cylinder engines it sells for $10, for three or four cylinder, $12.50, and for six cylinder, $15

WARNER AUTO-METER RESET

The Warner Instrument Company, of Beloit, Wis., has recently improved its autometers of the dial type by the addition of an extra trip reset as shown in the illustration. The regular trip reset brings the figures back to zero with a single turn. The extra reset operates the miles and tenths only. By using the two in conjunction any desired mileage can be turned up on the trip scale in a few seconds.

For example if the scale shows 48.6 miles and it is desired to set it back to 35 8, the regular reset is used to turn back the mileage until the trip dial reads 333.3. Then use the extra reset to turn up the miles and tenths to 5.8, when the full reading will be 335.8. The first figure will naturally be ignored



Warner Auto-Meter Reset

This new device is a great convenience in traveling by route book as it frequently happens that the motorist desires to spend some time doing the parks or boulevards of some city en route before continuing the trip. Heretofore it has been necessary in such cases to subtract this extra mileage at every subsequent turn or direction of the route book. The new Warner resetting device overcomes this objection entirely.

Another improvement is the outside wind and set to the high grade Chelsea clocks used in the Warner Clock Combination Auto-Meters, which is also shown in the illustration.

BANNER COMBINATION TOOL

We illustrate herewith a new combination tool made for 1912, consisting of a vise, anvil, hardy and drill press. This tool costs about the same as an ordinary vise of the same size and has the additional valuable features of the other tools that are neces-

Banner Combination Tool.

sary to a private garage. The height is 8½ in., width of jaw 3½ in. jaws open 6 in. and are faced with steel The drill will take any common sized square shank or bit stock drills up to ½ in. in diameter or a little larger. The draw bar is made of steel T rail. The tool is made by the Newhall Chain Forge and Iron Company, of 90 West St., New York City.

THE COMING SEASON'S REFINEMENTS IN SHALER VULCANIZERS ..

Type B Shaler Electric Vulcanizers will show a number of improvements this season.

The size of the heater has been increased to 7 x 3½ in. and the shape of the shelf on which the tubes are vulcanized has been shortened so that two tubes can be repaired

In operation on inner Tube.

as quickly as one. This shelf has an inlaid asbestos top which prevents the heat from radiating downward and confines it to the repair, thus shortening by several minutes the time required for vulcanization. The shelf in former years was of wood, but this

How two tubes are Placed on Shelf for simultaneous vulcanization

season is constructed entirely of iron, so that no matter how much work is done on it, there is no possibility of warping. This insures a perfectly plane surface at all times, and as a universal clamp is used to secure the tube to the shelf, absolutely uniform pressure is obtained with the result that the repairs are perfectly smooth and even. This patent clamp is so constructed that it can be adjusted and the vulcanizer applied to the tire in five seconds.

Instead of two vulcanizing plates Type B now has three. (1) A flat face for inner tube work. In the manufacture of this plate it is finished on an auto grinder which makes it a perfect plane. (2) The regular concave

Vulcanizing cut next to the rim.

face for vulcanizing casings without removal from rims. This face has one of its edges curved so that it is possible to set the vulcanizer next to the rim when repairing cuts on the side of the tire, which are difficult

Regular concave plate with curved edges for rim cuts

to reach when an ordinary vulcanizer is used. (3) An extra face, which is doubly concave so that it will conform exactly to the shape of the tire when vulcanizing a cut directly on the tread, and thus will give even pressure over its entire surface and can be used to repair at one setting cuts up to 7 x 3½ in.

Double concave plate for vulcanizing tread cuts.

These new and exclusive features make Type B especially valuable to garages having considerable tube repairing and hurry-up casing repairs where it is impracticable to remove the casing from the rims.

Vulcanizing tread cut.

The vulcanizer is made by the C. A. Shaler Company of Waupun, Wis.

9/10's OF ALL IGNITION TROUBLES ARE CAUSED BY

wrong magneto lubrication or lack of it. The whitest, highest priced cylinder oil on earth is not good enough for even the cheapest magneto.

Because all cylinder oils all every one of them are mineral oils. And there never has been and never will be a pure mineral oil made that won't gum, harden, dry out, collect dirt and clog delicate action points and bearings.

Clogged bearings start 9 10 of all ignition troubles. Don't take our word for this. Scoff all you wish. But just ask the manufacturer of your magneto or commutator.

"OILRIGHT" WITH "3 IN ONE"

3 in One is a clear oil compound of the highest known quality. It is used the world over for lubricating the most delicate mechanisms Swiss watches, costly scientific instruments, fire-arms, speedometers, commutators, etc.

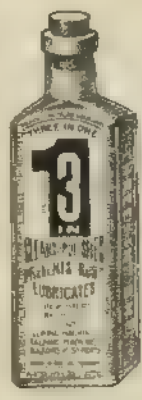
3 in One absolutely will not gum or harden in any magneto under any condition whatever — never

3 in One will not dry out in ball bearings or ordinary bearings.

3 in One will not heat up, smoke or burn at any rate of speed no, even 9000 revolutions per minute.

3 in One is a free flowing, penetrating oil with the right viscosity for any make of High Tension or Low Tension magneto. Will clean out bearings and keep them clean.

3 in One will also clean and polish your car body top cushions all wood, leather and nickel parts: also prevent tarnish and verdigris on brass parts.



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MOTORISTS AND BOATMEN

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M. C. and A. A.	$10.00	1¼-inch	$14.00
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Special light weight STRAINER, $1.00—prevents dirt, water, etc., entering Carburetor; insures clean fuel. Our $1.50 STRAINER is larger in settling chamber area.

Representatives: General Sales Co., 183 Jefferson Ave., Detroit, Mich.; R. A. Scranton, 205 Coleman Bldg. Philadelphia, Pa.; J. H. Hopp, 1833 No. Sawyer Ave., Chicago, Ill.; Geo. C. Webber, 135 W. 17th St., New York, N. Y.

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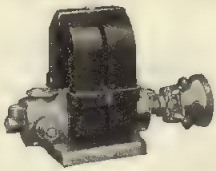
Our BOOKLET, telling how Crude Oil is Refined, and sample AUTOIL, free on request.

Star Magnetos
(LOW TENSION)
For Commercial Vehicles



A direct current magneto with vibrating coil, owing to simplicity in construction has been demonstrated to be the most satisfactory source of ignition for commercial cars.

This system does away with the complications and troubles of the high tension system and is rapidly gaining favor and being adopted by the leading manufacturers.

Write for particulars.

HERCULES ELECTRIC CO.
Indianapolis, Indiana, U. S. A.

1911 Excelsior Auto-Cycle

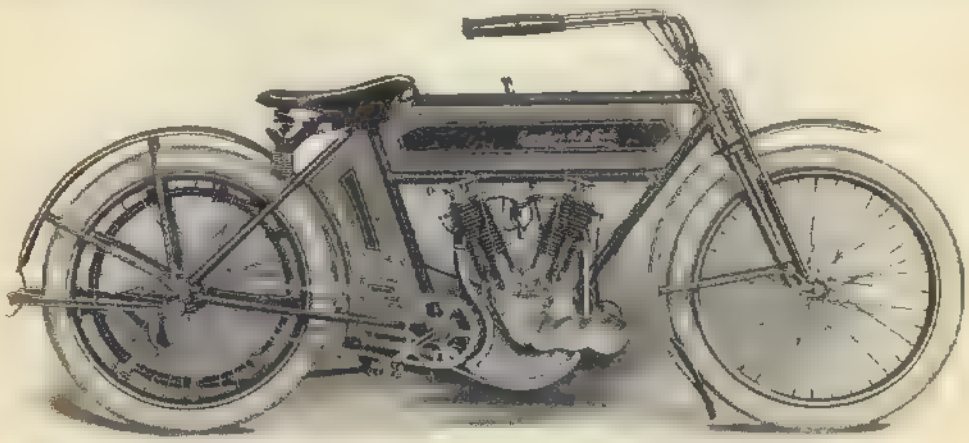
A single and a twin are offered by the Excelsior Supply Co., Randolph Street Bridge, Chicago, for 1911, the single being equipped with either battery or magneto systems and the twin with magneto only.

In 1908 the above concern placed on the market a double cylinder Excelsior, but the demand for their single cylinder machine was such that they were unable to make deliveries in the early part of the season and the twin model was therefore recalled and given a most rigid trying out. These machines have been sent out in the hands of the company's employees and ridden over all kinds of country roads and city pavements at two hundred miles and over per day, day after day. Any positive weakness or room for improvement was therefore discovered and thoroughly eliminated. Although the motor comes within the 50-inch class, it is conservatively rated at 6 h. p. The frame, front forks, tanks and general equipment are practically identical with the single cylinder machines except in such changes in dimensions, weight and reinforcements as have been found advisable. Except in dimensions and weight, the cylinders, fly wheels, connecting rods, valves, etc., are practically the same as in the single cylinder motors Both intake and exhaust valves are mechanically operated, both valves of each cylinder working from a single cam. The intake valves are operated by means of rocker arms over the cylinder head and the exhaust valves by direct thrust. Both are provided with adjustments for accurate timing. The valve gears and magneto driving mechanism are in a compact, oil-tight housing in the crank case and run in an oil bath.

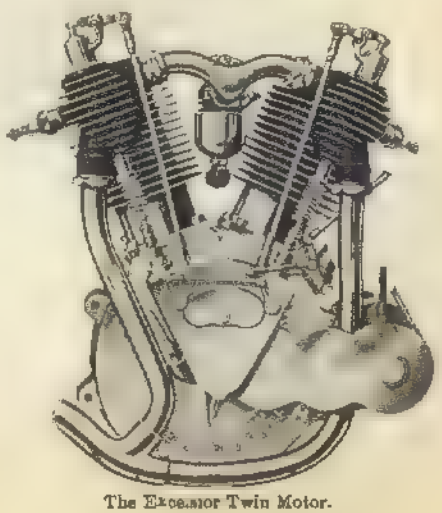
The carburetor is rigidly suspended from an arched manifold that cannot shake loose or leak. The lubricating system is practically identical with that of the single cylinder type. The crank case is secured to drop forged carriers extending forward from the crank case bracket by means of two bolts passing through the case. The cylinder heads are separately secured to the lower longitudinal frame member, giving absolute rigidity and preventing all chances of loosening. The drive is the same as in the single except that the belt is wider and of heavier construction. Both pulleys are leather lagged to prevent slipping.

The frame is of double-truss type with three point motor support. It is heavily reinforced throughout by a compound tubular and vertical wall reinforcement. Drop forgings are used throughout. The seat post cluster is of special design, carrying a horizontally extending seat post, which enables the saddle to be dropped to the lowest position.

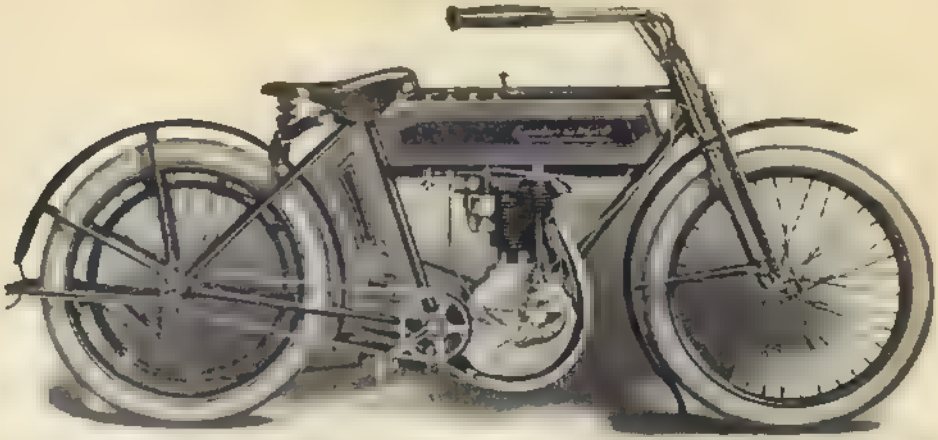
The cylinders are cast in one piece. An important feature is the location of the exhaust valve chamber. This is semi-detached



The Twin Cylinder Excelsior Auto Cycle, Model G; 6 H. P. motor, with mechanically operated valves; other specifications same as for the single cylinder; price $310.



The Excelsior Twin Motor.



The Excelsior Auto Cycle Model K—Battery Ignition; single cylinder; 4 H. P. 30.50 cubic inches displacement; flat belt drive; 28 x 2½ inch tires; price $225; Model KM, magneto equipment $250.

and connected with the cylinder walls only by the cooling flanges, thus allowing a free passage of air between the chamber and cylinder wall. The piston is fitted with three rings and two oil grooves. The piston pin is a hollow shaft of tool steel held in place by recessed lock washers and Whitney keys.

The exhaust valve heads are made of the same metal as used for the cylinder. The valve stem is turned down, leaving a shoulder against which the valve head is screwed, after which the thread at the end is riveted over, making a positive gas-tight joint.

Lubrication is by means of a sight feed oiler. Special attention is given to the construction of the fly wheel—to produce a smooth, even, rhythmic action, the weight is placed where it is most effective and the balance absolutely correct.

The gasoline tank is of copper, double seamed throughout, and fitted with strainer, filter, needle valve and draw-off- cock. The finish of the machine is in gray with red panels and striping. All exposed metal except the aluminum crank case is highly nickel plated. The single cylinder machine, battery ignition lists at $225, with magneto ignition $250. The twin lists at $310.

THE "DETROIT" MOTORCYCLE

The Detroit Motorcycle Mfg. Co. 619-25 Majestic Building, Detroit, Mich., have placed on the market the Detroit motorcycle, one of the striking features of which is the frame. This is built of four and three-inch tubing which provides compartments for all of the motorcycle equipment with the exception of the motor and carburetor.

The upper tube of the frame contains a gasoline tank and the rear tube of the frame under the seat is fitted with an insulated receptacle for batteries and coil. These are readily removable as is the gasoline tank by turning a thumb screw under the seat and lifting up a lid which is fitted on a hinge. The upper portion of the front tube of the frame is utilized for gasoline tank and the lower portion contains the muffler which discharges directly toward the ground. Between the muffler and oil tank s sufficient air space with the proper vent. The use of the muffler and oil tank in this tube provides for the keeping of oil at proper temperature during all seasons of the year.

The handle bars are of the straight V-type at an angle similar to the angles of the frame and allows a very perfect control of throttle and spark. The motor is four horsepower, single cylinder, and power is transmitted by 1¾-inch flat belt and the free engine obtained by idler. The long wheel base, 60 inches, and the low saddle position, 29 inches, is obtained with this frame; 28-inch wheels are fitted.

The "Detroit" Single Cylinder 4 H. P. Motorcycle; 60 inch wheel base; 28 inch wheels.

Washington, D. C., which purchased a number of R. S. machines some time ago for the use of their secret service men and special police, has ordered two more machines.

The Motorcycle Equipment Co., of Hammondsport, N. Y., which was started six years ago and is doing a large wholesale and retail motorcycle supply business, was incorporated in October with $14,000 capital.

1911 Harley-Davidson Models

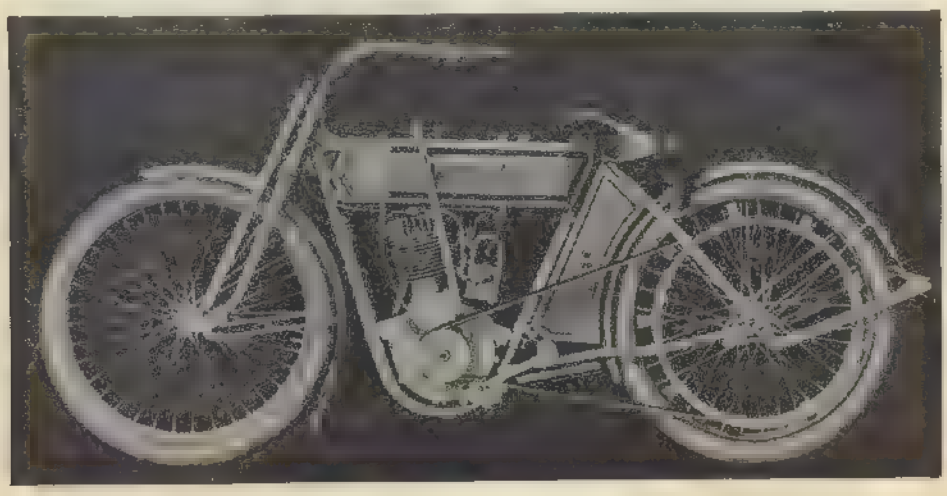
The 1911 line of Harley-Davidson Motorcycles, manufactured by the Harley-Davidson Motor Co., Milwaukee, Wis., will comprise three models, viz: a single cylinder 4 h. p., battery ignition, listing at $225; a single 4 h. p., magneto ignition, $250, and a twin 6½ h. p., magneto ignition, price $300; all flat belt drive.

The Harley-Davidson Model 7D, 6½ h. p. Model; Magneto Ignition; Price $300.

No striking mechanical changes mark the new models, improvements being in the nature of refinements and perfection of the many features. The use of chrome nickel steel and vanadium steel has supplanted ordinary carbon steel throughout the entire machine. The lines of the frame and tanks have been beautified, and the new models may be distinguished by a heavy gray stripe on the tanks and tool box. The 1¾ inch flat belt transmission will be continued on all models. In connection with this transmission, an important improvement has been incorporated in the way of a patented belt shield, which keeps mud, sand and water away from the belt at all times, and protects the rider's clothing when going through mud puddles, or even in fording small streams.

The 1911 models, on account of a better balance of the motor as a whole, and several changes, are claimed to be somewhat faster than the 1910 models, although the bore and stroke remain the same

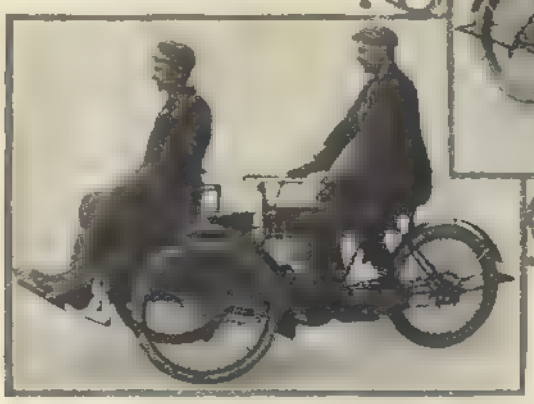
The cylinder head flanges are now cast vertical in place of horizontal as heretofore. By this method the radiating surface has been increased by 17 per cent. The one piece cylinder and head are retained. The magneto position is also the same.



The Harley-Davidson Model 7A, 4 h. p. Model; Magneto Ignition; Price $250.

One change which, at first, must seem radical, is the adoption of mechanical inlet valves on the twin. The makers state that the reason for this is that they have found from four years' experience with the automatic type of valves on double cylinder machines, that they did not give satisfactory results, particularly at low speeds. The twin cylinder motor is an altogether different proposition as applied to a motorcycle, because the very design of it is conducive to mis-firing at low speeds when the automatic type of valve is used. To overcome this tendency, mechanical valves will be used On the single cylinder model the automatic type will be retained.

The semi-automatic vacuum feed oiling system that has been used for the past nine years will again be used without change. With this system it is impossible to foul the spark plug on account of an overflow valve which prevents flooding in the crank case. On the other hand, a sufficient amount of oil for all conditions of ordinary running is assured at all times, and for special purposes (such as racing) it is possible to increase the supply while riding.



One of the new R-S wagonettes made for the Boston Elevated R. R. Co., of Boston, Mass The box is heavily built, provided with rail and foot rest, so that an extra man may be carried.

NEW USES FOR MOTORCYCLES

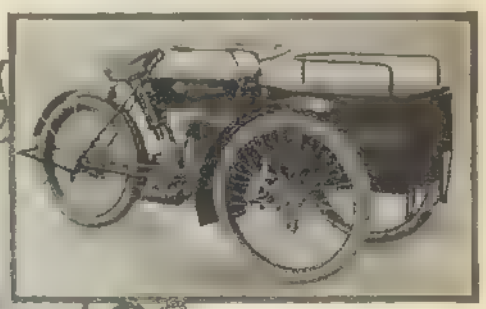
The motorcycle has such a universal field that new uses are constantly cropping up. One of the latest of these is the distribution of theatre tickets, a corps of motorcycle messengers being maintained by a Rochester, N. Y. theatre. The city has been districted, and when a call for tickets is received at the theatre they will be given to the messenger in whose territory the patron may be located, and collection made therefor. In this way the patrons of the theatre will be relieved of what has always been the most trying part of giving a theatre party or of attending a performance—standing in line, or a trip downtown to get the seats.

NEW "R-S" WAGONETTES

Wagonettes are proving quite popular with railroad, telephone and telegraph companies for use by their "trouble men," and the Reading Standard Co., of Reading, Pa., has sold quite a number for that purpose The Edison Electric Ill. Co., of Brooklyn, N. Y., has had two in use for some time, and has just purchased another for the use of their purchasing department.

The Boston Elevated R. R. Co., of Boston, Mass., has purchased four wagonettes of special construction. These are adapted to carry an extra man, the box in front being provided with a railing and a folding foot rest. Thus the "trouble man" and his assistant, with tools and supplies, can make emergency runs and repairs in much less time than it formerly took with horses.

The machines are equipped with 4 h. p. 1910 "R-S" motors, special heavy rims and spokes, fitted with 2¾ inch tires and extra



Four of those machines will be used by the R. R. Company's "trouble department," to carry trouble men and their assistants.

wide mud guards. The foot rest is adjustable by means of thumb screws, and can be folded up out of commission against the front of the box.

Another use for the wagonette is that of quick delivery of flowers, H. C. White, of Massillon, Ohio, a florist, having purchased an R-S machine for use in his cut flower department.

The Bi-Motor Equipment Co., 177 Portland street, Boston, Mass., will represent the Emblem motorcycle for New England.

The Thor Models for 1911 will consist of a 4 h. p. single chain or belt drive with magneto or battery ignition, and a 7 h. p. twin magneto ignition only.

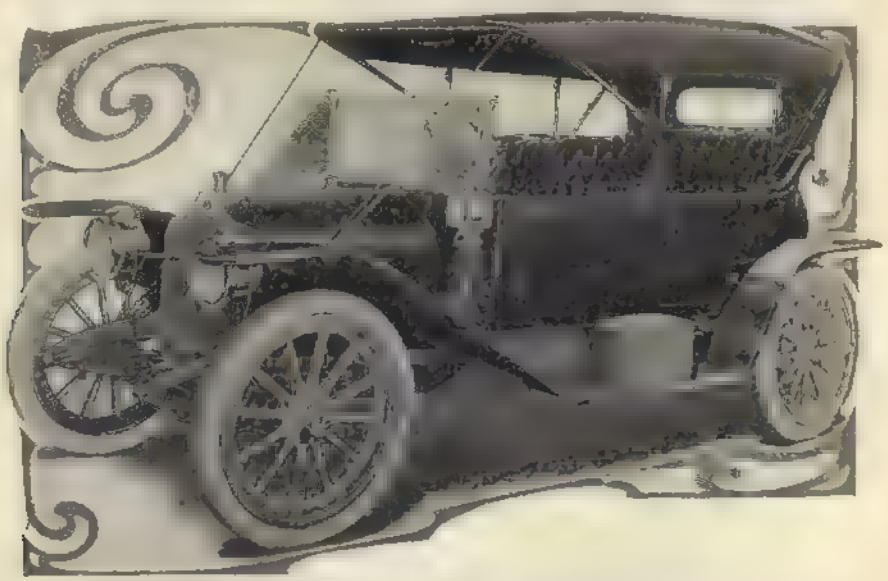
Oklahoma City, Okla., has ordered ten motorcycles for the use of the police department, in patrolling the residence district and enforcing the automobile speed regulations.

Selden 1911 Models

The Selden Motor Vehicle Company is making for 1911 a most attractive and complete line of touring cars. In addition to the five and seven passenger touring cars along lines very similar to those of last year, the Company is now producing three new torpedo models of the desirable straight line type. While the five and seven passenger touring cars have 116 and 122-inch wheel base respectively, the new torpedo models have 125 inch wheel base. These latter also have drop frames and like the two touring models are sold fully equipped.

pedal operated muffler cutout, tire irons, a set of tools and one extra rim with torpedo models.

Model 44 is a four-passenger car, Model 46 a six-passenger, and Model 40-A a two or three-passenger. The first two models are finished in Selden blue with pearl gray chassis, or in Brewster green with carmine stripings. The upholstering is of hand buffed leather. The motor accessories are the same as those of the five and seven passenger touring car, including a Stromberg carburetor, Bosch high tension magneto, etc.



1911 Selden Model with Top.

Fig 1. This illustrates one of the new Selden models with torpedo type body with straight line effect. Motor four cylinders, 4¾ by 5, valves all on the left side, sliding change gear three speeds forward and one reverse, leather faced cone clutch, semi-floating rear axle, internal and external brakes operating on drums 14-inch diameter, 2-inch face.

The new models are known as 44, 46 and 40-R and have that long, low racy appearance that has been so much sought after.

Three New Models.

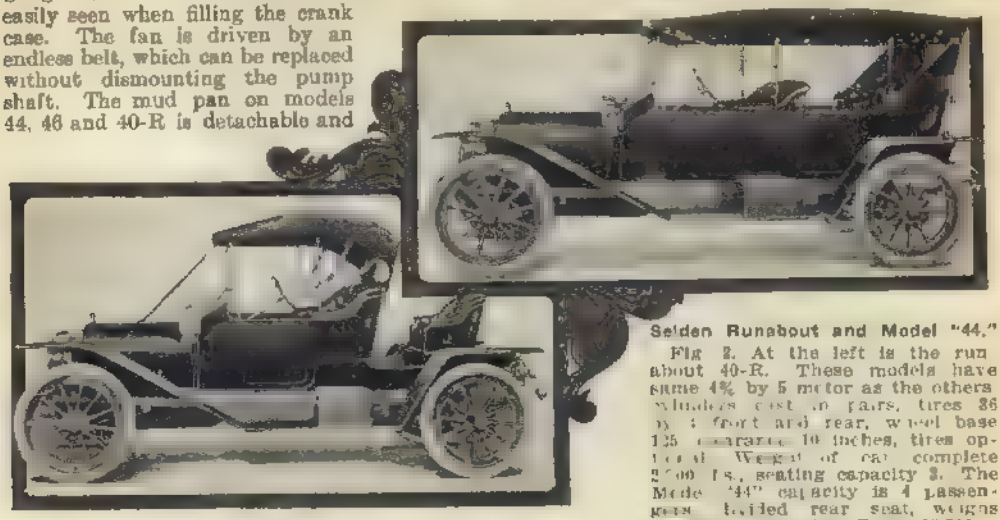
The three new models have three-quarter elliptic rear springs 52x2½ inches, an unusually liberal spring equipment. The front springs are semi-elliptic and measure 38x2 inches. The pressed steel dropped frame is raised over the rear axle and inswept at the dash. These three new models are of the straight line design, the torpedo effect being carried right into the hood, which gradually tapers from the dash to the radiator, which gives an attractive appearance. Each of these models has front doors and is equipped with Firestone quick detachable demountable rims. In fact, all the Selden cars next year will be fully equipped, the equipment including top, side curtains, slip cover, wind shield, two gas head lights, Prest-O-Lite tank, two oil side lights, one oil rear light, battery box on

Every one of the cars produced by the Selden Vehicle Company is equipped with a four cylinder motor of 4¾ inches bore by 5 inches stroke, which gives 36.1 horse power according to A. L. A. M. rating, but actually develops 48 horse power. The sliding gear transmission gives three speeds forward and one reverse, selectively operated. The control levers are in the inside of the body.

All the valves are on the left side, and the motor is carried on a sub-frame. Ignition is by Bosch duplex system, with two sets of plugs. The motor is cooled by means of a square tube radiator and a centrifugal water pump. Lubrication is effected by the splash system, self contained within the motor. A gasoline tank of 16 gallons capacity in the seven passenger model and 17 gallons in the other models is carried under the front seat. The engine is practically the same as last year, except that the oil pump and timer are located somewhat higher up between the cylinders, where they are more

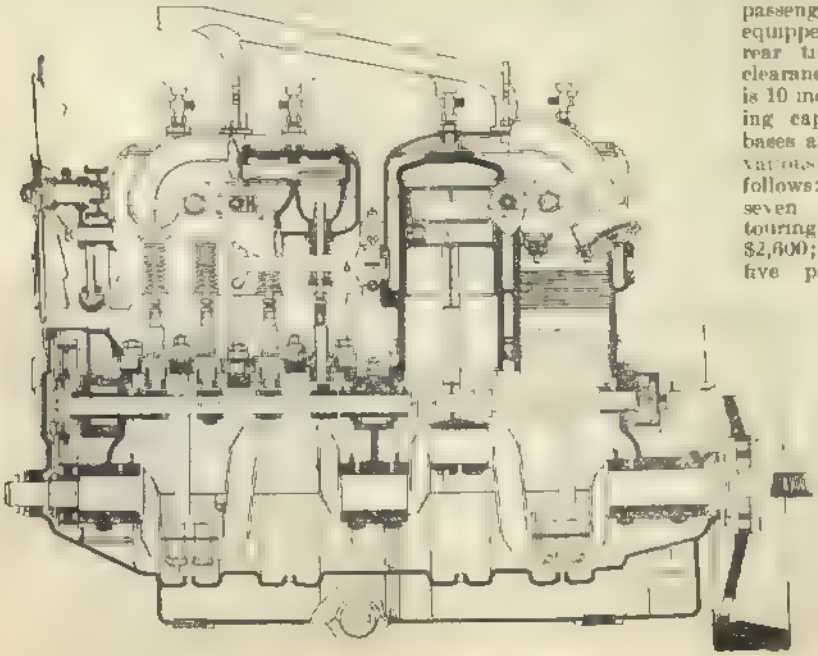
accessible. The oil filler has been placed in a more convenient position, and the oil gauge is now so arranged that it can be easily seen when filling the crank case. The fan is driven by an endless belt, which can be replaced without dismounting the pump shaft. The mud pan on models 44, 46 and 40-R is detachable and secured with spring fasteners. The transmission to the rear axle is by a universally joined shaft, two universal joints being used this year in all models with the exception of the smallest car, which has but one.

All the rear axles are of the semi-floating type and have mounted upon them two sets of brakes, internal and external respectively, acting on brake drums 14x2 inches, directly secured to the rear wheels. The combination worm and nut rack and pinion steering gear is used. The front axles consist of I section drop forgings. Leather faced cone clutches are used and the change gear is of the selective sliding type affording three forward speeds and one reverse. The gear lever is arranged inside the body on the right side. The tire equipment is 36x4 inches all around, except that the seven passenger touring car is equipped with 4½ inch rear tires. The road clearance in all models is 10 inches. The seating capacities, wheel bases and prices of the various models are as follows: Model 40-S, seven passenger open touring car, 122 inches, $2,600; Model 40-T, five passenger open touring car, 116 inches, $2,250; Model 44, four passenger torpedo, 125 inches, $2,500; Model 46, six passenger torpedo, 125 inches, $2,600; and Model 40-R, three passenger, front door roadster, 125 inches, $2,500.



Selden Runabout and Model "44."

Fig 2. At the left is the runabout 40-R. These models have same 4¾ by 5 motor as the others, cylinders cast in pairs, tires 36 by 4 front and rear, wheel base 125 clearance 10 inches, tires optional. Weight of car complete 2,500 lbs., seating capacity 3. The Model "44" capacity is 4 passengers, divided rear seat, weighs complete 2,900 lbs. Price $2,500.



The Selden Motor.

Fig. 3. This motor is used in all 1911 Selden models, cylinders cast in pairs 4¾ by 5. Bosch high tension magneto, storage battery, Stromberg float feed carburetor, valves all on the left side.

a small trigger determining the direction. The jack comes in two sizes, with a capacity of 2,000 and 3,000 pounds, for $2 and $2.50 respectively.

The auto supports or tire rests are made of malleable iron, with a black enamel finish, in sets of four. They come in three sizes, for axles under 14, 16½ and 18 inches high.

The Randall-Faichney Co., of Boston, Mass., are exhibiting in Space 149. Here is shown the well known "Jericho" horn, which we described in our issue of September, 1909, page 138. A new accessory which they are introducing, the "Foy Tail Lamp," is featured.

The Foy Tail Lamp.

This is electric, and throws the light from above on the license number, the holder for which is a part of the lamp. The number plate is merely slipped into this holder, and held in place by heavy spiral springs.

The shell is of special brass, which opens at the bottom, giving easy access for cleaning the interior. The lens is of standard railroad signal type—ruby red. A strip of celluloid runs the full length of the under part of the lamp, giving a well-diffused light, which completely illuminates the number plate and projects a beam of light on the roadway.

The lamp is attached by two bolts, or screws, to the back of body or frame of car.

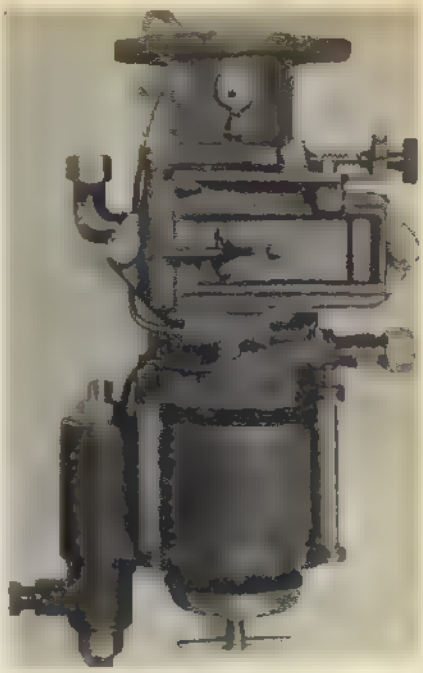
The Reichenbach Laboratories Co., of Chicago, Ill., are exhibiting in Space 311. This is the first year the company has exhibited in Madison Square Garden, and their goods are more or less new to the public. Two types of the Vortex Vaporizer, Type A with concentric float, and Type C with offset float, are exhibited.

The New Vortex Vaporizer.

Two models are being put on the market by the Reichenbach Laboratories Co., of Chicago, Ill., the only difference being in the float chamber, as seen in the illustrations, Type A having a concentric float and Type C an offset adjustable float.

The distinctive feature of this carburetor is the whirling motion which is given the mixture, making it thoroughly uniform, and enabling the use of the low grade gasoline now on the market with the least degree of trouble in vaporizing it. The vaporizing tube is hot water jacketed, and of thin brass, enabling the heat to be effectively utilized.

The air is admitted to the spray nozzle not only from the bottom, but also through two venturii or air holes, pierced through the cylinder surrounding the spray nozzle, level with its top. These venturii are bored excentrically with regard to the nozzle, so



The Vortex Vaporizer, Type A.

that the jets of air which they admit pass on opposite sides of the nozzle and set the mixture whirling at a rapid rate. This whirling mixture of air, gasoline vapor and liquid is drawn through the vaporizing tube, the drops of gasoline being thrown by centrifugal force against the walls and vaporized by the heat of the water in the jacket.

An important feature is that this heat of the jacket is prevented from reaching the float chamber, in Type A, and vaporizing the gasoline before reaching the spray nozzle, weakening the mixture. The float chamber is carefully insulated from the water jacketed mixing chamber, the only connection of the two being by the four bolts shown in the illustration.

The auxiliary air is admitted through the trap door like arrangement shown in the illustration of Type A. The adjusting levers for this door are seen in the illustration of Type C. This is the one adjustment necessary on the carburetor, and would give it distinction in the absence of its other qualities. The spring shown holds the inner lever tight against the outer, which is rigidly attached to the air gate, which opens inward, and is thus held closed until the suction increases with the speed so as to overcome the resistance of the spring and open the air gate.

Now, the whirling motion of the mixture is a feature of the apparatus, and in order that the auxiliary air may not disturb this motion, but rather increase it, the air passage is led in a spiral from the air gate

Co. has facilities for attaching and removing tires at the various branches of the Pennsylvania Rubber Company and is also prepared to install presses at the truck factories where Polack tires are being fitted in quantities. This tire is exhibited at Space 146.

The Philadelphia Steel & Forge Co., of New York City, are exhibiting in Space 412. There they show articles used by the automobile trade, made from their natural alloy steel, in some cases treated and in other cases untreated. These articles consist of axles, roller bearings, gear blanks, die blocks and drop forgings of different kinds usually used by automobile manufacturers. An assorted quantity of nut locks made from steel which they manufacture is shown.

The Polson Mfg. Co., of Buffalo, N. Y., are showing in Space 621 a complete line of their Windshields, Bumpers, and accessories. Their Model M Shield, which is shown has been refined and the top section made automatic with the hand wheel left at the center so as to insure a good substantial joint. Their Bumper has been changed into a Universal Bumper that will fit any car with a pressed steel frame without drilling any holes or removing any bolts.

A new shield with the company is the Ball Bearing Automatic, which can be had in both the straight and set-back types in 35, 41 and 44 inch widths.

The Pittsfield Spark Coil Co., Dalton, Mass., is exhibiting at Space 168 a complete line of spark coils, plugs, switches, timers and magnetos. The latest additions to their already large line of ignition goods are the new type D Timer, Baby Primary Switch, and the Improved High Tension Magneto.

Pittsfield Type D Timer.

This of the steel ball contact type, the ball being held by a container on the central shaft. It is adjustable, making but one adjustment for any number of cylinders and

The "Pittsfield" Type D Timer

allowing a short or long contact. There are two ball bearings used on each timer: one at either end of the base, which make it an extremely easy running timer, and at the same time positively prevent wobbling and looseness on the shaft.

Baby Primary Switch.

The Baby Primary Switch is designed for making or breaking the primary circuit. It is small and compact, and yet is strong and durable, using the same design of key as the magneto switch, which prevents the use of anything but the right key for making the contact. This switch is made in either open or closed circuit styles.

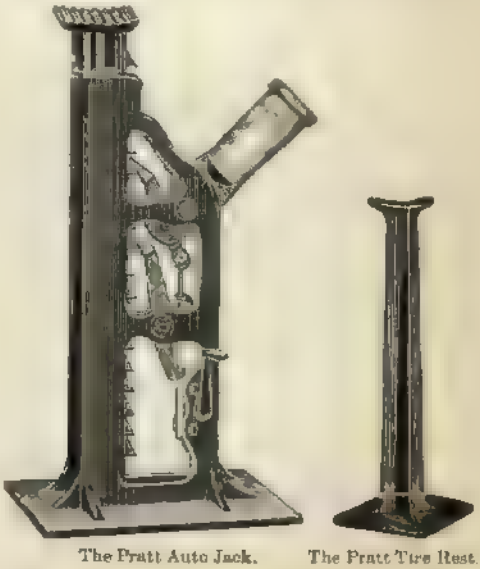
The "Pittsfield" Baby Primary Switch.

The Improved High Tension Magneto is of the same basic design as this company's 1910 product, but with several original improvements which greatly increase the efficiency and also greatly reduce the possibility of breaking down with undue strains.

The Wm. E. Pratt Mfg. Co., of Chicago, Ill., are exhibiting in Space 537, where they show their Pratt Auto Jack and Auto Supports.

Pratt Jack and Auto Support.

The Pratt Auto Jack is made of malleable iron, nicely finished in enamel, aluminum, or galvanized. It is light, speedy, compact,



The Pratt Auto Jack. The Pratt Tire Rest.

and is quite powerful. It is simple, having only five parts, held together by two bolts. The frame is in one piece, a very strong construction. Raising or lowering is by one notch at a time, on the downward stroke,

The Model "E"

Now Ready

Everyman's Car

$485.00

F. O. B. Factory

Rumble Seat and Tool Box $20.00 Extra.

The Same Price—

THIS new Brush model is built on the same fundamental principles as former Brush cars—on the same fundamental principles that will underlie all future Brush cars—on the same fundamental principles that have made it EVERYMAN'S CAR.

There are refinements and improvements in the Model E which will increase the efficiency of the car and make it more than ever deserving of the great reputation the Brush enjoys among 10,000 owners all over the world.

These improvements are few and not one of them is radical in any way. They are simply the result of a careful study of the car and of the user's requirements.

When we designed and built the first Brush, we were not aiming to make a car that would sell because it was different and low in price. We foresaw the demand for a small, dependable automobile that would provide a quicker, easier and cheaper means of transportation for the thousands who were using horse-drawn vehicles and the street cars in the performance of their duties.

True, the initial cost of the Brush is low. Please do not judge the car by its price, but rather by what it is doing every day for 10,000 users; judge it by the practical sensible features of its construction; judge it by its looks; judge it by the wonderful showing it has made in economy, hill-climbing and endurance contests.

The Brush has always shown well in trials where simplicity, economy and dependability counted, but during the past year some of its performances have been truly wonderful.

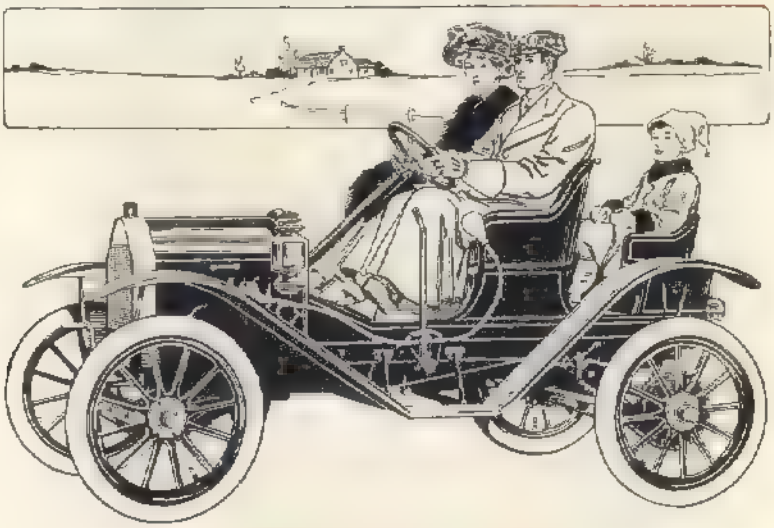
For example, we cite the trip of the

"Abernathy Kids"

You remember the boys who rode broncbos from their father's ranch in Oklahoma to New York to meet Colonel Roosevelt and take part in the now famous Roosevelt parade. These same boys, Louie and Temple, 9 and 6 years old respectively, drove a Brush runabout back to Oklahoma after only three lessons. Louie drove most of the journey, as Temple was not tall enough to reach the control pedal

Brush Runabout

For Delivery



—a Better Car

The father of the boys chose a Brush for them, because he found after a careful investigation that the Brush was the only car they could start and handle without help, and because it was so simple mechanically they could understand everything about it. Thousands realize this since reading about the trip and seeing this 9-year-old boy driving

In the Munsey Historic Tour, the principal endurance contest of the East in 1910, the Brush finished with a perfect score and won the trophy in its class. The route covered 1550 miles over all kinds of roads from the boulevards of New Jersey to the rough mountain roads of Pennsylvania.

Thousands of experienced motorists watched the Brush travel on even terms with the big cars on a schedule designed for big car power and big car stability. They saw it come through with a perfect score under conditions that put several big cars out of the running. They saw it prove its dependability in a way no one could doubt

These two achievements of the Brush are of vital importance to the prospective motor car buyer. The former shows superlative simplicity, each shows dependability

If you use any mode of transportation you will be doing yourself an injustice if you do not investigate the Brush. Let us tell you what it is doing for merchants, physicians, salesmen, collectors, architects contractors, farmers, R. F D. Carriers, artisans—it fact, for people in all walks of lif—people whose annual income varies from $. 00 to $25,000. Let us show you what the Brush will do for you.

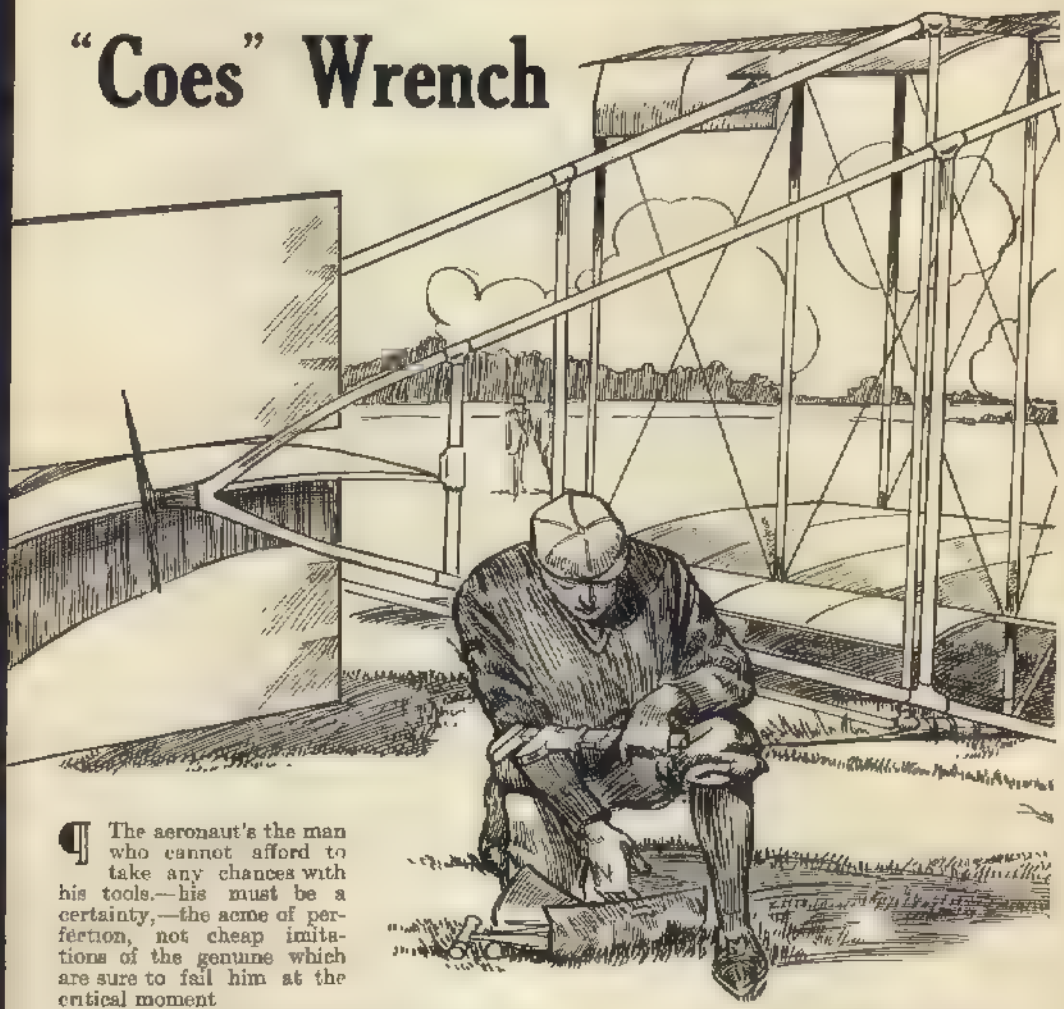
If there is no Brush Dealer in your locality let us show you how you can make money selling EVERYMAN'S CAR.

Brush Runabout Co., 1212 Rhode Island Ave. DETROIT, MICH.

Licensed under Selden Patent

The Invariable Choice

The "Coes" Wrench

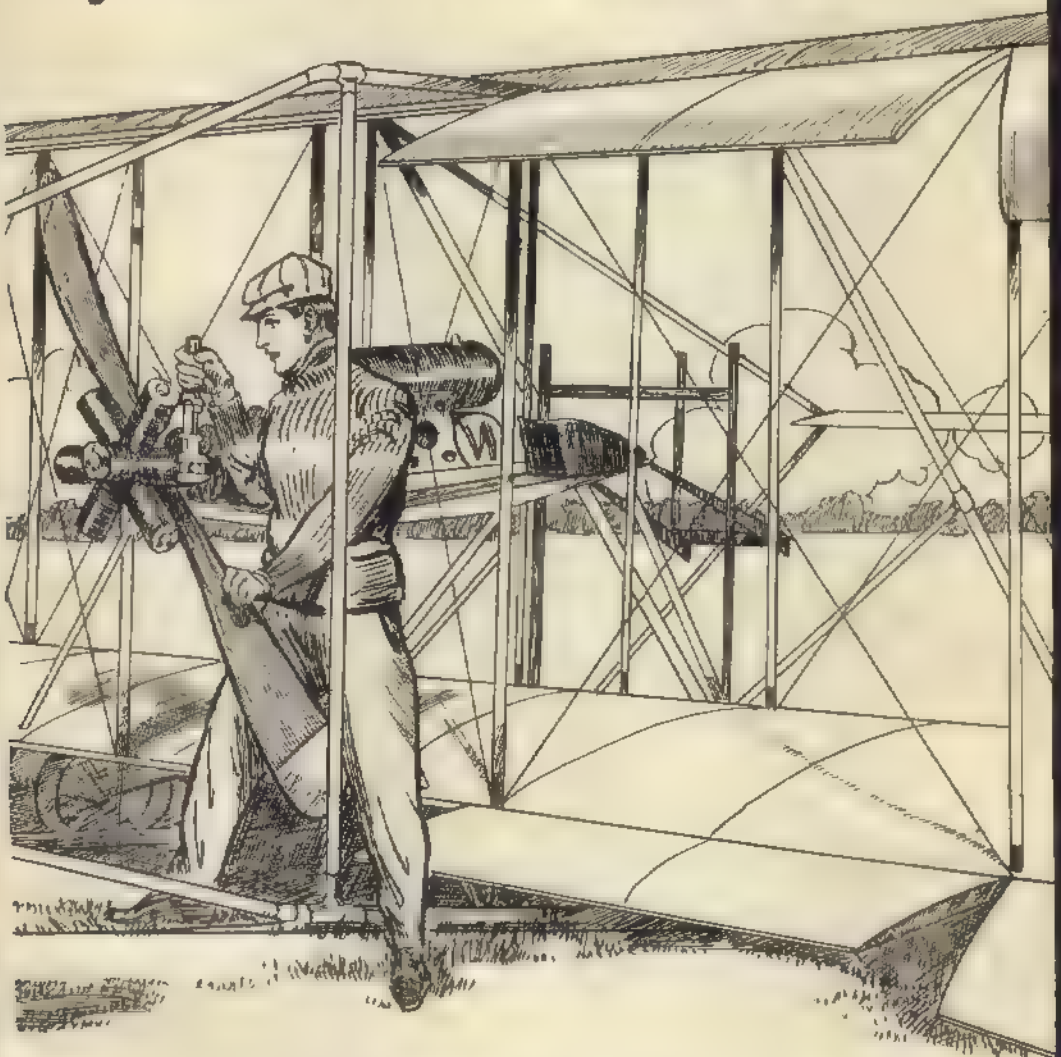


¶ The aeronaut's the man who cannot afford to take any chances with his tools.—his must be a certainty,—the acme of perfection, not cheap imitations of the genuine which are sure to fail him at the critical moment

¶ This accounts for his choosing the **"COES" Wrench.** An imitation of the **"COES"** might possibly fool him once,—the exterior appearance having temporarily turned his head,—but without the "stuff" behind it, there's no use for the pomp and splendor—and the whole thing soon proves itself a sham.

¶ In the genuine **"COES"** there is strength, but not clumsiness, individuality without freakishness in fact in its every line are found practicability, quality strength and originality to a rare degree.

of the AERONAUT



¶ The man who knows always demands the **"COES,"** and thereby avoids all wrench woes. Get one, today! Any good dealer will supply you, and you'll never need another. It will last an eternity and in every instance will live up to all the claims we make for it, and it's never varying excellence will mean for you permanent wrench efficiency and satisfaction. *May we send our Wrench Book?*

Coes Wrench Company, Worcester, Mass.

AGENTS: J. C. McCarty & Co., 21 Murray Street, N. Y. City
J. H. Graham & Co., 113 Chambers Street, N. Y. City

1911 DIETZ

Oil, Gas, Electric LAMPS

THE Dietz leaders for 1911 will be the new DIETZ "ROYAL" STEEL LAMPS for commercial vehicles, and the DIETZ "VICTOR" close-coupled headlight. In addition, the Dietz line will include the square and round oil and oil-electric side lamps already so well known, with improvements of detail. The familiar and reliable "DAINTY" tail lamp and the Dietz "HANDY" generator will likewise be continued. On this and the next page specifications are given.

Dietz "VICTOR" Headlights

Close coupled, with shell, flare and back in one piece; short focus lens mirror readily removed by undoing four accessible screws; removable front glass held by screws; cast sockets with inside stiffening plates; cast hinges; ventilator drawn in one piece with inside draft deflector.

Prices:	6-inch Lens Mirror	- -	$21.00 per pair
	7-inch " "	- -	25.00 " "
	8-inch " "	- -	30.00 " "

Dietz "ROYAL" Steel Lamps

A new line designed expressly to endure the vibration of commercial vehicles; two side sockets riveted through stiffening plates; removable aluminum reflector and front glass; oil founts held by rigid four-point catch of new design. Price, $15.00 per pair.

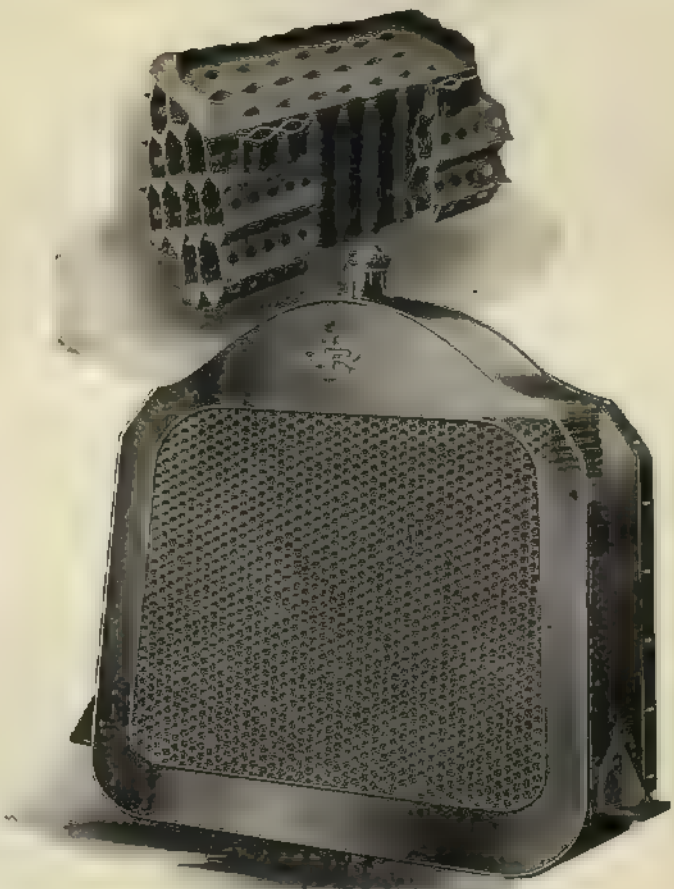
DIETZ "ROYAL" JUNIOR, smaller and less expensive than the "ROYAL," Price, $7.00 per pair. ROYAL STEEL TAIL LAMP, designed somewhat like the "DAINTY" tail lamp, Price, $3.50.

STERLING JUNIOR

THE

HARRISON

STANDARD



COMBINES MAXIMUM SIMPLICITY
RELIABILITY AND EFFICIENCY

See it at the Madison Square Garden Show, Parts 1 and 2
Space No. 607

MANUFACTURED UNDER VARIOUS U. S. PATENTS BY

The Harrison Radiator Co., Lockport, N. Y.

"ROYAL" STEEL LAMP

1911 DIETZ

Pleasure, Commercial LAMPS

Brass Side Lamps

The square lamps, "STERLING," "STERLING JUNIOR" and "QUEEN" are continued with an improved anti-rattling oil fount catch.

The round lamps, "REGAL," "IDEAL" and "ORIENT," are continued for both pleasure and commercial vehicles, the latter having two side sockets. The "DAINTY" is continued in both side and tail lamp styles.

Electric Attachments

Square and "DAINTY" tail lamps are fitted in combination oil-electric styles when so ordered. A new square electric lamp is added to the line. By using the "COMET" electric burner any of the round lamps, including the "ROYAL" may be adapted to electricity.

The "VICTOR" headlight is fitted with parabolic reflector for electricity when ordered.

Finishes

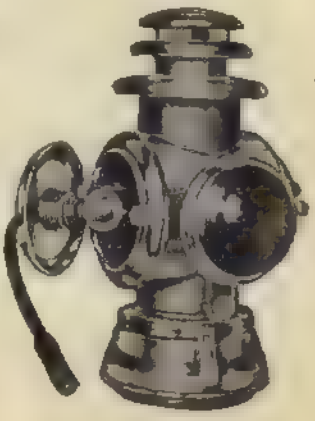
Regular finishes are Black Japan for the steel lamps and polished brass, gun metal, nickel and black nickel for all styles of brass lamps.

Dietz "HANDY" Generator

The round style of this generator is continued from 1910, no water jacket being used. This is one of the simplest and most dependable generators on the market.

See us at the Madison Square Garden Show, Space 189

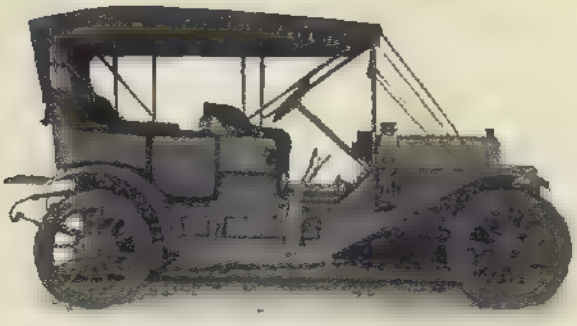
R. E. DIETZ COMPANY
60 Laight St., NEW YORK CITY



"DAINTY" TAIL LAMP

The Henry

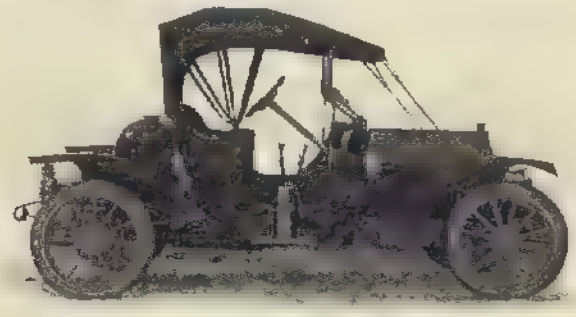
BUILT TO SELL



Five-Passenger Touring Car—Model "M." $1750. 40 H. P.

This is the car that made the perfect Road Score in the Chicago Motor Club's 100-Mile Reliability Tour, November 7th to 11th, inclusive 200 miles or more daily for five days, over all kinds of roads,—from Chicago to Moline, to Quincy, to Peoria, to Champagne, to Chicago.

The HENRY 40 was the most economical in fuel consumption of all touring cars, finishing with perfect road score



Roadstar—Model "K." $900. 25 H. P.

This car is of ample size and horsepower, and is a REAL AUTOMOBILE not a toy. Do not misjudge it by the price, for it compares favorably with other cars of its type, selling for $1500 or more.

HENRY MOTOR CAR

1507 MICHIGAN AVENUE

"40" for 1911~

ON ITS MERIT

The HENRY LINE for 1911 is one of the most complete showings of touring cars and roadsters and meets the requirements of those motorists who may have preferences for different body types.

It therefore, is a line which will enable the agent to meet every demand, and will please the autoist because he can obtain exactly what he desires.

The HENRY CAR is a tried and proven proposition,—it does not embody extreme features for the sake of originality It has been built to sell on its merits and is making a host of friends daily for that very reason.

ROADABILITY is our first consideration, for we are determined that the HENRY "40" shall always be known as a RELIABLE CAR.

If you are looking for an automobile which represents full value one which will give you satisfactory service —is handsome in appearance,—and is made RIGHT, you should look no further!

We would be pleased to send you a copy of our catalog,—it is yours for the asking

Four-Passenger, Demi-Tonneau, Model "B"—$1750; 40 H. P.

Enclosed Roadster, Model "E"—$1800, 40 H.P.

Roadster, Model "P"—$1750, 40 H P.

Five-Passenger, Foredoor Touring Car, Model "F"—$1800, 40 H. P.

Fore-door, Demi-Tonneau, Model "H"—$1800; 40 H. P.

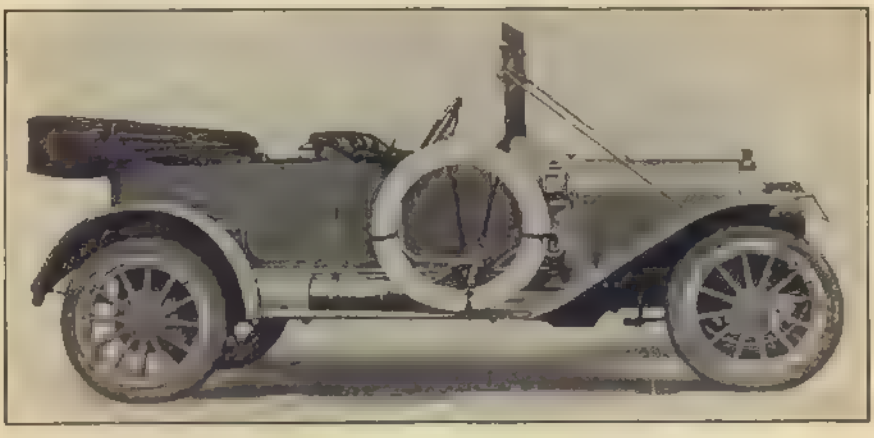
Roadster DeLuxe, Three-Passenger, Model "X"—$2200 equipped; 40 H. P.

SALES COMPANY

CHICAGO, ILLINOIS

CORBIN CARS

Model 40 Torpedo—$3100.00, Fully Equipped



SPECIFICATIONS

Motor—Four cylinders, cast in pairs; 4½" bore x 5½" stroke; 40 horsepower.

Ignition—Two complete and separate systems—(1) storage battery with unit coil and distributor; (2) high-tension imported magneto.

Lubrication—Self-contained circulating system.

Transmission—Selective. Three speeds forward and one reverse, all gears nickel steel; shafts revolving on imported annular ball bearings.

Rear Axle—Full floating type

Chassis—Pressed chrome steel, heat-treated frame, inswept in front, raised over rear axle, 120" wheel base; 36" inch wheels; 4" tires.

Equipment—Top, with full set of side curtains; top boot; adjustable rain-vision windshield; Warner Model "K" Speedometer; Firestone Q. D. Demountable Rims; headlights; combination oil and electric side and tail lamps; Prest-O-Lite Gas Tank; storage battery; trunk rack; tire holders; full kit of tools, etc.

¶ Special attention has been given to the new **Corbin** high-powered motor, and following, we give a list of body styles furnished with this model:

Five-Passenger Touring Car	**$3000.00**
Four-Passenger Toy Tonneau	**3000.00**
Seven-Passenger Touring Car	**3050.00**
Four-Passenger Torpedo (Shown above)	**3100.00**
Seven-Passenger Limousine	**4000.00**

¶ All the above types are supplied with the very complete equipment as specified.

Built With the Trouble Omitted

FOR 1911

¶ The 1911 **Corbin** line consists of three models and eleven body types—a car for every need. ¶ **Corbin** cars are—and always have been—a representative and leading car in their class. ¶ They are built by one of the famous **Corbin** industries, and represent honest and expert workmanship, best material and superior design. ¶ There is a characteristic look about a **Corbin** car that reflects beauty and dignity in every line—the perfect harmony of superb finish with correct and pleasing style is apparent at first glance. ¶ A thorough examination proves the car to be mechanically correct.

MODEL 18—$2750.00

This model, with a few refinements, is a continuation of our last year's model, which proved so popular.

Ample power, room and comfort are insured with its thirty horse-power motor, 120-inch wheelbase and 34-inch wheels with Quick Detachable Rims.

This model is furnished with either Touring Car or Toy Tonneau Body.

This is a splendid car for all-around usage

Model 18—$2750.00

Model 30—$2000.00

MODEL 30—$2000.00

We have produced our Model 30 to meet the demand for a low-priced car, bearing the same **Corbin** mark of excellence as our higher priced products.

Although selling at a low price, these cars are not assembled from parts purchased from other manufacturers, but made entirely in the **Corbin** factories.

This model is produced in two body types—a five-passenger Touring car and a two-seated Roadster.

The motor is the well known **Corbin**, 30-horse power, four cylinder motor, cylinders cast separately. Wheelbase is 115 inches, with large 34 x 4-inch wheels.

¶ The 1911 **Corbin** models are not the creation of this year alone—they are the cumulative result of our entire experience, covering a period of over six years.

Write for Handsome Catalogue **Dealers Wanted in Unallotted Territory**

We shall Exhibit at N. Y. Licensed Show—January 7th-14th, 1911

Corbin Motor Vehicle Corporation

NEW BRITAIN, CONNECTICUT

Licensed Under Selden Patent

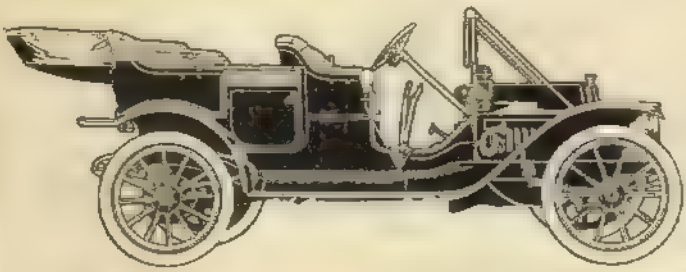
THE "EVERITT 30" $1350

Licensed under Selden Patent.

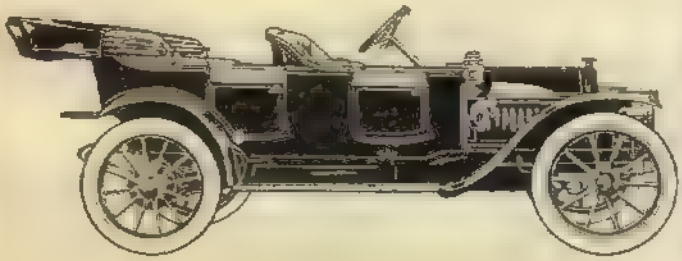
The Model of the Year 1911

This is the low-priced car which has the most of the features that will be called for in 1911.

This is the car which others will be most anxious to imitate in performance.



Finest Mohair Top and Brass Framed Wind-Shield, $100 Extra



Four Door Body, $50 Extra; Finest Mohair Top, $75 Extra.

$1350

Complete with Magneto, Battery, Horn, Generator, Gas and Oil Lamps and Full Kit of Tools. F. O. B. Detroit.

SPECIFICATIONS

COLOR ... Royal Blue with Mahog... stripe and Red Cross trim. French ... Top to ... Seat.

BODY ... passengers. Rear ... Tire Carrier.

FRAME ... Drop Forged.

WHEEL-BASE ... 110 inches.

AXLES ... Solid.

SPRINGS ... Semi-Elliptic.

BRAKES ... Two sets ... operating ... drums ... rear wheels.

HUBS ... Ball Bearing.

TIRES ... 32 inches.

CYLINDERS ... Four cylinder ... 4½ inches.

STROKE ... 5 inches.

COOLING ... Water ... gear driven ... centrifugal pump and ... honeycomb ... radiator.

RADIATOR ... Genuine honeycomb.

IGNITION ... Magneto and Battery ... Improved coil with coil ... switch.

DRIVE ... Shaft.

TRANSMISSION ... Sliding ... gears ... Cannot be ... impossible to ... gears.

SPEEDS ... Three forward and ... case.

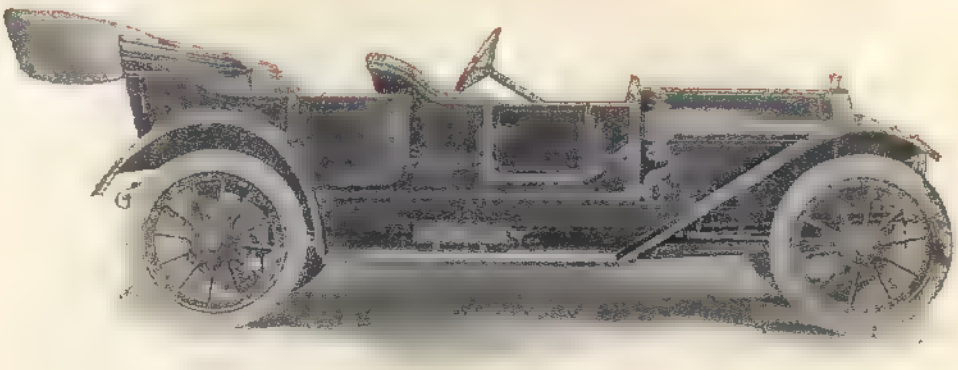
LOCK ... Gear shifting ... can be ... with ... protect ... owner against ... thieves or use of car.

The mere announcement of the "Everitt 30" last season brought inquiries from hundreds of dealers who wished to handle the car to be produced by B. F. Everitt, Wm. E. Metzger and William Kelly.

An output of 4000 cars for 1911 will enable us to take care of a number of additional dealers.

For further information write the factory

METZGER MOTOR CAR Co. DETROIT, MICH.



BIG SIX—MODEL 32

Six Cylinder—Model 34—4 x [illegible] 50-60 H. P. [illegible] Wheels
138-in. Wheel Base. Detroit Type Rims.

PRICE, Fully Equipped, including Mohair Top. **$2,500**

McFARLAN SIX-1911

NOTE, with emphasis, that McFarlan Stock Cars, entered in America's great Motordromes—Indianapolis and Atlanta—in races ranging from 10 to 200 miles **have never changed a tire in a race,** [illegible] ths of it. Isn't that pretty conclusive evidence of six-cylinder superiority? **Seventeen Miles to the Gallon of Gasoline.**

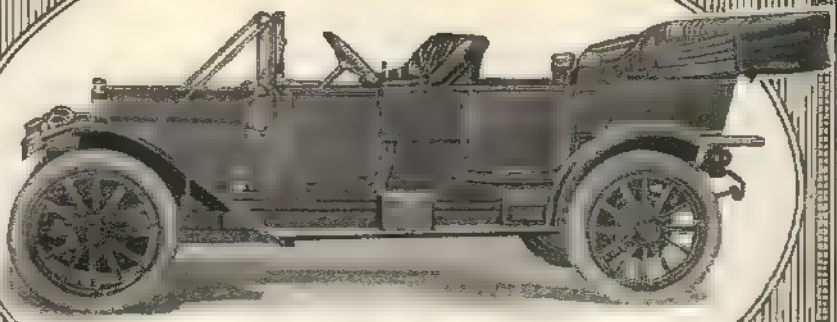
In all these racing events, etc., the McFarlan has made an average of 17 miles to the gallon of gasoline, another fact that explodes the one feeble argument which the exponent of the four-cylinder car can harp on for lack of something more substantial.

No Mechanical or Tire Troubles

In the newspaper reports of these great speed and endurance events the McFarlan stands out conspicuously **as the one car** to finish without mechanical or **tire troubles.**

It has been no small undertaking to develop a thoroughly high-class, high-powered, six-cylinder car that can meet the price competition of the popular four-cylinder cars, but that is precisely what we have done with the McFarlan Six

Cunningham



40 H. P.—$3500 complete, including imported mohair top, windshield, gas headlights, combination oil and electric side and tail lights, Prest-O-lite tank, tire irons, 2 extra demountable rims, Warner speedometer, Bosch magneto, shock absorbers, robe and foot rails and complete set of tools

THE CUNNINGHAM has demonstrated by **actual performance** to possess every good quality of the world's best automobiles in addition to which it embodies many advanced and original features in engineering design.

TO DEALERS who are looking for a future that really means **"SUCCESS"** we say: **"LET US SHOW YOU THE CUNNINGHAM,"** for when selling the **CUNNINGHAM** you are selling a car which offers a large measure of satisfaction which inspires for it honest praise. There are several makes of automobiles now so popular that their agency is a great asset. The **CUNNINGHAM** is of this class.

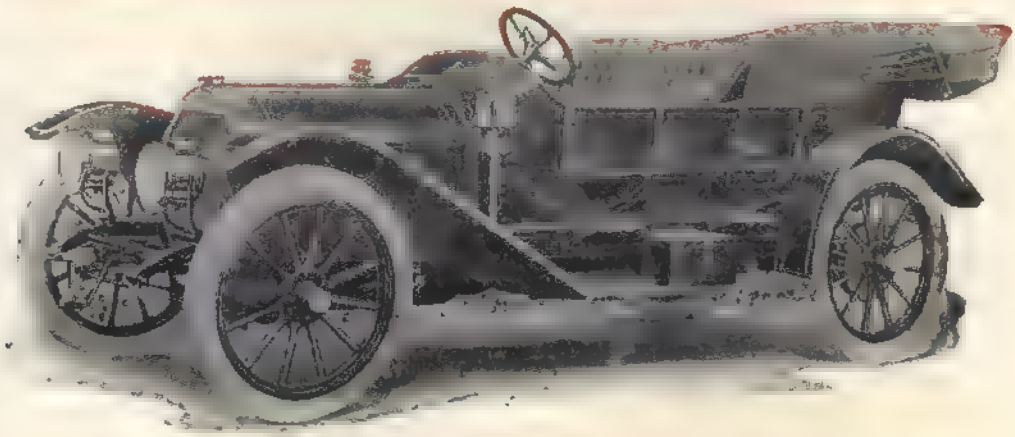
TO PROSPECTIVE BUYERS of automobiles who want a car of strength, durability, style and comfort, the **CUNNINGHAM** offers a realization of the ideal.

Let us substantiate our claims by sending you our catalogue, giving in detail the superior construction of the **CUNNINGHAM.**

James Cunningham, Son & Company

Chicago Branch
35 WABASH AVE.

40 Canal Street, Rochester, N.Y.



LITTLE SIX—MODEL 28

6 Cylinder Model [illegible] 40 H. P. 32", 34 [illegible]
Wheel Base [illegible] 120" Q. D. Rims

PRICE, Fully Equipped with Mohair Top **$2100**

McFARLAN SIX-1911

When you select a four-cylinder car at $1,500, or $1,600, or over, and add to it the necessary equipment which is included in the McFarlan Six price, but **no** in the four-cylinder car price, your four has cost you practically the same amount

And in style, in comfort, in motor efficiency, flexibility, absence of vibration in power, hill-climbing ability and speed, there is absolutely **no comparison**—which fact a demonstration to anyone of open mind will reveal in a few miles' ride

Complete Equipment Low Price

The McFarlan Six is the first big, luxuriously furnished six at a price within the reach of the buyers of moderate-priced cars

And mind you, we are **not** exploiting in this folder an undeveloped, untried car which is going to do things. We are talking of the McFarlan Six which we have spent three years in developing—a car that has earned its **performance** is right to beat a name that for four generations has stood for high quality in the construction of road vehicles

We will mail upon request, a sheet of comparative data on motor car construction which will prove extremely interesting to any man who **is interested in the motor car subject.**

The McFarlan Motor Car Co.

CONNERSVILLE, INDIANA

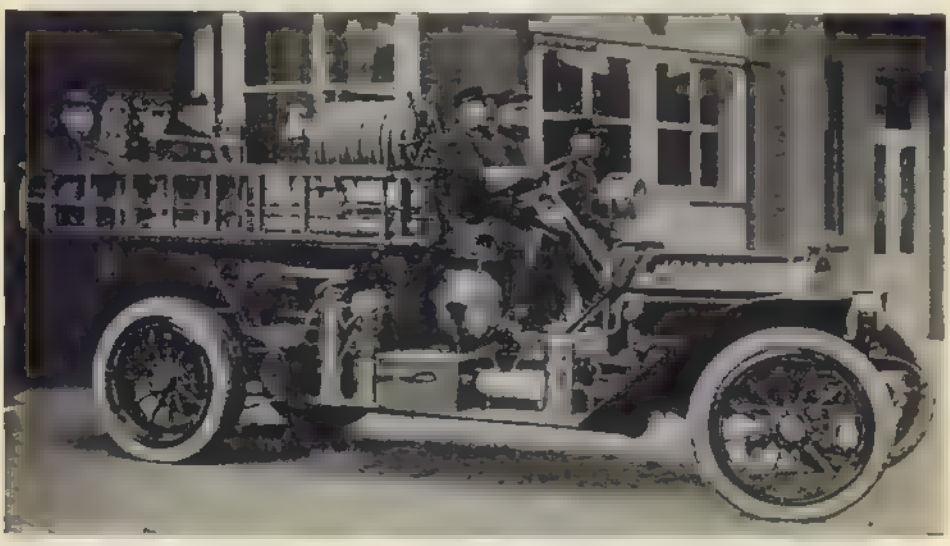
Desk I

The Automobile Combination Wagon; Its Adaptability to Fire Service; Its Efficiency and Economy

We all know that seconds at the start of the fire are worth more to us than minutes at a later time, so it is my opinion that the automobile apparatus has come to stay and that we will all purchase auto machines in the future. The auto combination will make better or quicker responses than the horse drawn in all kinds or conditions of streets or weather; this has been proven many times in all parts of the country. Prompt action is required in fire service and the auto is and is to be the means of that prompt action. Reports state that at least 75 per cent. of fires are extinguished by chemicals alone, in all probability the general use of the auto combination will increase this percentage to 85 or 90 per cent.

The auto combination will also be a great success in handling brush and grass fires, getting on the job so much quicker than horse drawn apparatus that the fire is still of no great extent and so will be handled in much shorter time and apparatus and men returned to the station ready for the next call, the auto apparatus making quick responses as well as quick responses.

Capt. A. H. Strong of Hose 7 of Springfield, Mass., in a paper read before the Massachusetts State Firemen's Association, speaking of the automobile in the Springfield department says, "This has been so successful that before many years have passed, the horse as a motive power in the Springfield Fire Department, will have ceased to exist."



The American La France Fire Engine.

Combination Chemical Engine and Hose Motor Car with Standard Equipment, Type "5." Motor 48 h. p. (A. L. A. M.), 4 cylinders, 6½-inch bore, 6-inch stroke; three speeds forward and reverse; 140-inch wheel base; force-feed and splash lubrication; 38-inch wheels; pneumatic tires, single on front, dual on rear; double chain drive; complete chemical equipment. Built by the American La France Fire Engine Co., Elmira, N. Y. A detailed description of this apparatus will be printed in an early issue of the Journal.

The automobile combination can be used for many different purposes; as an ambulance it will be the means of saving the lives of those overcome by smoke or gases, or who have been injured in other ways, by affording quick transportation to hospital; as a fuel wagon, fuel can be furnished the engines more expeditiously, especially when the engines are at some distance from the supply base.

Comparing with the horse;—The automobile can get to the fire much quicker, is more reliable, never tires, only fed when working, less danger of accidents, being under better control of driver than horses; driver to be used as a fireman; takes less room; no stable; no attraction or breeding place for flies; less cost of maintenance.

The automobile has proved a success, why wait further development? Use what is now provided as you will get all the improvement in later purchases.

All consideration:—sanitary, monetary, those of comfort and convenience and of

*The above are extracts from papers read by Harry L. Marston, Chief of the Fire Department, Brockton, Mass., and Hugo R. Delfs, Chief of Fire Department, Lansing, Mich.

efficiency show the great desirability of the displacement of the horse by the motor propelled vehicle.

From Hugo R. Delf's Paper.

On November 22nd, 1909, our City "Lansing, Mich.," had a call for help from the village of Bath, Mich., 10½ miles distance, we responded with our auto fire engine, taking 1500 ft. of 2½ inch hose and 5 firemen. This made a weight of 8000 lbs., we made the run over extremely bad roads (slush, ice and snow) in 28 min.; on our arrival we found 3 two-story buildings on fire. We dipped into a small swale about 700 ft. distance and in a short time we had the fire under control. Had we to depend on loading a steam engine on a railroad train, the fire would surely have wiped out the village. We made the return trip in 27 min. This to me clearly demonstrates the adaptability.

You will hear the question "Do the motors always start when an alarm comes in?" They certainly do. Lansing has to have her first failure of her motor apparatus to start, and with the exception of two accidents, has never failed to get to the scene of action. Accidents, I assure you, may happen to auto apparatus just as well as to horse-drawn apparatus, but I do maintain that accidents to auto apparatus should not be as frequent as to horse-drawn apparatus. My main reason is the perfect control one has of the auto apparatus.

I will give you a report as to the cost of maintenance since the day our city installed motor apparatus.

The Auto Fire Engine, built by the Webb Motor Fire Apparatus Co., has a sixty horse-power, six cylinder motor (Olds), equipped with a rotary pump, with a capacity of six hundred and fifty gallons per minute (plug pressure), carrying one thousand feet of hose, axes, tools, suction pipes, etc., placed in service December 12, 1908, and during the 19½ months responded to 242 fire alarms travelling three hundred and sixty-seven miles, and to 35 exhibition and test runs, travelling sixty-nine miles; pumping at actual fires twenty-nine and a half hours, and at exhibitions 5 hours and 45 minutes. Cost to maintain (for gasoline, cylinder oil, grease, spark plugs, recharging storage batteries, etc.) was $77.90, or 14c. a day; and the cost inclusive of two accidents of $296 77, was 64c. a day. The tires, notwithstanding the fact they have been in service nearly twenty months, show no material wear, never had a blow out or puncture

The auto chemical (combination) wagon, placed in service November 22, 1909, was built by the Olds Motor Works, and has a sixty horse-power, six cylinder motor, with a chemical capacity of one hundred and twenty gallons. It has responded to 141 fire alarms, travelling 226 miles, and to 7 exhibition runs, travelling 20 miles, discharging 4,542 gallons of chemical. Cost of maintenance (for 8 months) $34.17 or 14c. a day. Tires on this auto are in excellent condition—never had any trouble whatever.

The Chief's car (Oldsmobile Special) has a forty horse-power, four cylinder motor and was placed in service December 12, 1908, and during the 19½ months responded to 256 alarms, and was used for all

Test made by the Robinson Fire Apparatus Company, of St. Louis, using a Chadwick chassis, made by the Chadwick Engineering Works, Pottstown, Pa.

other business connected with the department (visiting sub-stations daily, inspectors, etc.), traveling 4,475 miles. Cost of maintenance (for gasoline, re-charging storage batteries, spark plugs, cylinder oil, tire repairs, etc.) $168.15 or 29½c. per day. Adding there three pieces for a period of 19½ months would mean a total of $576 89. To accomplish the same work using horses, you would require eight horses, which cost to maintain (for oats, hay, bedding, veterinary bills, harness repairing and shoeing) about $18.00 a month per horse, amounting in all to $2,800 00, or a saving to the city of $2,231.11 by using motor apparatus. We also save the salary of two drivers, one on the steam engine and one on the accompanying hose wagon, which would amount to approximately $2,730.00.

Our city is so well pleased with their auto apparatus that I can safely predict that we will have no horses in our departments within three years.

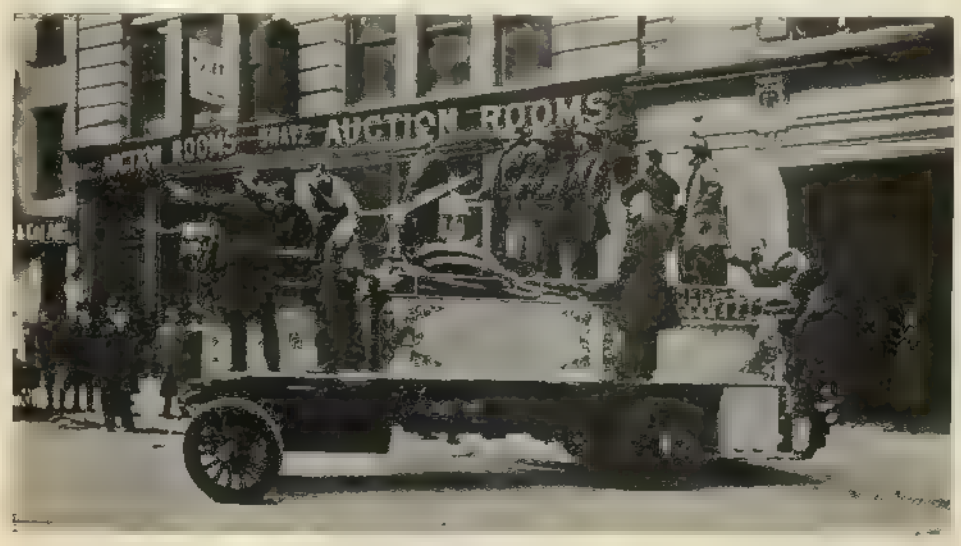
In concluding my remarks I firmly believe that auto apparatus will take the place of the horse drawn apparatus, and when it becomes universally used that the enormous fire waste in the United States will be decreased materially

Knox Motor Driven Fire Apparatus

One of the chief features taken into consideration by the Knox Automobile Co., of Springfield, Mass., in designing their motor driven vehicles for fire service is the elimination of all construction with a trend towards touring car practice.

The Knox Company manufactures an extensive line of fire apparatus, including combination hose wagon, chemical and squad wagons, dispatch wagons, and fire insurance patrol. The largest machine this concern manufactures is shown by the accompanying photograph. This is what is known as their M-2 Model, and is the largest and heaviest piece of motor driven fire apparatus ever built. It has a gross weight of 7 tons, and runs at a speed of 25 miles an hour on solid tires. The apparatus illustrated is used by engine house No. 72 in E. 12th St., N. Y. City. It has been in service for 2 years, and answers on an average of 45 calls a month. A four cylinder water cooled motor, 5½ bore and stroke is used to propel this machine, and it also operates the water pump. The size of the body is 12 feet 6 inches by 5 feet 3 inches. The fire equipment furnished includes chemical tanks, 200 feet ¾ inch chemical hose and nozzle in wire baskets; two 3 gallon fireman's extinguishers; one extension ladder; one roof ladder; two fireman's lanterns; one axe; one bar; one hook; one door opener; two pony chemical holders, boxes for soda bags; acid container and small parts. The body equipment includes speedometer, clock, two oil and electric side lamps, one oil or electric tail lamp, one gas searchlight on dash, electrically ignited, one Presto-O-Lite tank, one horn or gong, etc.

This Company has recently added to its line a motor propelled pumping engine of



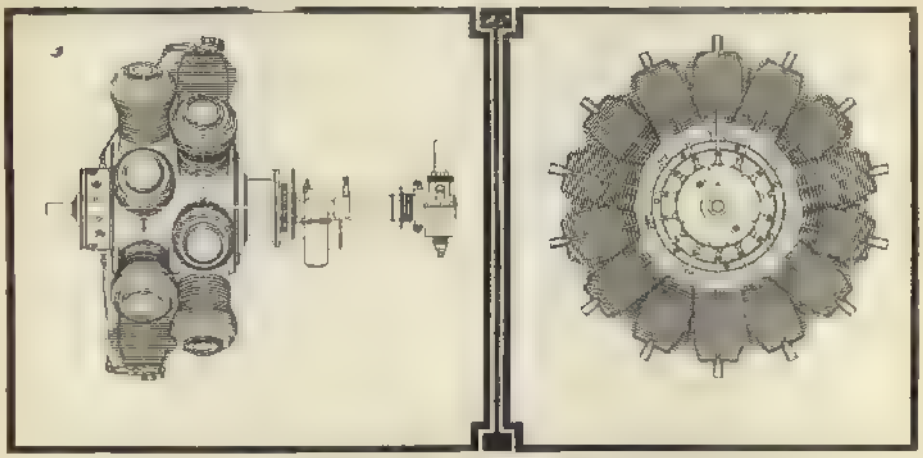
Knox High Pressure Hose Wagon.

This photo shows the Knox high pressure hose wagon furnished to the city of New York just leaving engine house No 72 in East 12th Street in answer to a call. This machine has a gross weight of 7 tons runs at 25 miles per hour on solid tires, carries 3-inch high pressure hose, and a crew of 15 to 20 men.

altitudes of from 7000 feet upward the cold is extreme, and if higher altitudes are to be reached such devices will be absolutely necessary. At any rate few aviators care to plane down from such a height without the assistance of the motor, and it will be on the side of safety to provide against the stopping of the motor

THE GNOME AVIATION MOTOR

It is evident that the revolving engine is destined to be quite popular for aviation use. This radial cylinder construction obtains an extremely light motor in proportion to the power. For instance, if we consider the weight of the seven cylinder, 50 h. p. Gnome at 165 pounds, this can be divided into eight parts, seven of which will be equal, and can be considered as representing the seven cylinder groups of cylinders, pis-

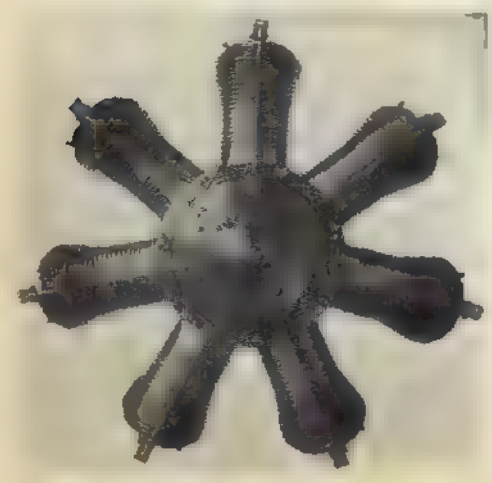


Two views of the 100 h. p. 14 cylinder revolving Gnome aviation motor. This weighs only 220 pounds. Bore 4.4, stroke 4.8.

ton, connecting rods, valves, etc., one set weighing 18 pounds. The eighth part is, of course, the crank case, including crankshaft bearings, cams, gear, etc., and this division of weight gives it 39 pounds. Now a single cylinder engine made up of one of these cylinders and the crank case would weigh about 50 pounds, and an engine of the seven cylinder vertical type about 300 pounds. This difference in weight is of considerable import to an aviator. An additional saving in weight is effected through the engine being air cooled, doing away with water jackets and connections. Cooling is, as may be imagined, extremely effective, as the engine revolves in the air at great speed. This very revolution, however, against the resistance of the air, takes power, it being estimated that the seven-cylinder Gnome expends 7 h. p. in overcoming the air resistance to its revolution.

The revolving mass has a flywheel effect that is very valuable in giving uniformity of explosion spacing and consequent steadiness of power application, and as the charge is conducted through the hollow crankshaft and enters the cylinders through automatic valves in the piston heads, while the exhaust valves are in the cylinder heads, centrifugal force aids charging and expulsion of the burnt gases in an appreciable degree. Full advantage cannot be taken of this in speeding up the motor, however, for the centrifugal force at speeds greater than about 1300 revolutions per minute would be so great as to tear the engine apart. Two types of the Gnome engine are being put on the market by the Aeromotion Co. of America, of St. Louis, Mo., a seven-cylinder and a 14 cylinder. The 14 cylinder motor is in effect two of the seven-cylinder motors placed side by side, the general features being the same, the crankshaft having two throws, one for each set of seven cylinders. A separate magneto and oil pump are provided for each set. The bore is about 4.4 inches, the stroke 4.8.

The weight is 220 pounds, and when it is considered that there are seven explosions per revolution, the power which this motor



The Gnome seven cylinder 50 h. p. revolving motor. Bore 4.4, stroke 4.8. Weight 167 lbs.

tors should be prohibited in all well-regulated meets. At least until such time as the science of aviation has advanced to a point where it is absolutely certain the construction will stand the terrific strains suddenly produced by this performance. It is only a question of time when those addicted to this method of alighting will snap a support or guide wire when within a few feet of the ground and disaster will result. Suddenly attempting to bring the machine onto a horizontal keel after a terrific dip at an appalling angle is an extremely dangerous maneuver and one which is avoided by the more conservative fliers.

This leads us to a consideration of the fact that the machines are not sufficiently strong to withstand the utmost in the way of speed and sudden turns which the aviator in extremity is likely to put upon them, and therefore they should be made heavier. That this can be done without seriously damaging their flying ability has been clearly shown by many flights with one and two passengers, and by a recent flight with an ordinary machine in which three passengers besides the driver were easily taken into the air.

Safer In the Air than on the Ground.

The machines while in the air are safe enough, it is of course the landing which hurts, but as far as the observations of the writer extend the conclusion must be drawn that very few of the air craft at the present time have adequate arrangements for handling them properly, while on the ground after a safe landing has been effected. The starting places are usually fairly smooth, but the landing places may not be. If alighting directly into the wind most of the machines will remain on an even keel until they come to a stop, but the slightest side gust, bump or depression while the machine is rolling slowly may turn it partly around, so that the wind can capsize it. There is no precision or accuracy in the movements of flying machines when rolling along the ground slowly after the engine has been shut off and the aviator is to a certain extent helpless, just before stopping. The wheels on nearly all the machines are too near the center, so near, in fact, that many accidents have happened by allowing a wing tip to touch. When an attempt is made to light with the wind on the side or quarter, although the first landing may be made perfectly safe owing to the accuracy with which the machines can be controlled in the air while at speed, yet after rolling a short distance they may so turn that the wind will easily capsize them, which usually means a broken wing, smashed propeller, and sometimes even injuries to the engine or aviator.

Brakes Are Necessary.

Brakes on an aircraft may sound out of place, but they certainly are needed just as much as on any other vehicle, not to bring them to a standstill in the air, but as soon as they alight. Practically all air craft of heavier than air type are fitted with pneumatic tires and ball-bearing wheels, and as aeroplanes have very little head resistance they will cover considerable ground when alighting at a speed of say 20 to 30 miles an hour. This on more than one occasion on which the field was restricted by buildings, fences, or spectators has resulted disastrously, not only for the aviator himself, but for the onlookers. For this reason every machine should be supplied with just as efficient a brake acting on its wheels or by sprague scraping the ground, as an automobile.

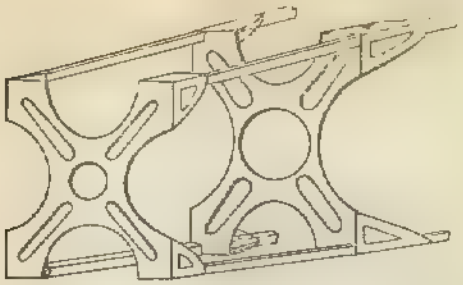
In alighting the motor is usually stopped by cutting off the ignition, ordinarily by grounding or short circuiting. It is not customary to stop the engine by throttling, but the control mechanism should always be so arranged that either or both methods can be employed. It is not inconceivable that an air cooled motor of large bore might continue to drive the machine some distance if overheated even after the spark had been cut off, and several instances are on record in which the ignition could not be cut off, with the result that the light running mechanism was driven against another machine, fence, building or other obstruction.

Grademeter.

Although one usually thinks of the air highway as without hills, there seems to be a necessity for the use of some form of grademeter. Aviators well know that climbing is one of the first feats to be mastered, as at the very start the craft must be driven upward to a suitable height to clear terrestrial objects. If the angle of ascent is too great the machine may very quickly lose headway and come to a standstill, under which circumstances a sudden slant in almost any direction might result with an inexperienced driver. For altitude records such a device would be of the greatest advantage. Brookins, Drexel and Johnstone, while in the clouds, surrounded by mists and benumbed with the cold, had the greatest difficulty in determining the angle at which they were ascending, or in fact in knowing just what position the machine was in. As each machine has an angle at which it climbs best a small instrument, which would weigh but a fraction of an ounce, conveniently placed under the eye of the operator, would at once remedy the troubles mentioned, and add materially to the possibilities of high flights.

Jacketed Carburetors.

The altitudes which have now been reached are sufficiently high to cause trouble with the carburetor, due to freezing, it might therefore be worth while in the future for those attempting altitude flights to provide their carburetors with some form of heating device, such as water or exhaust jackets and also with some means of quickly and readily adjusting the mixture to compensate for the extremely rarified air. At

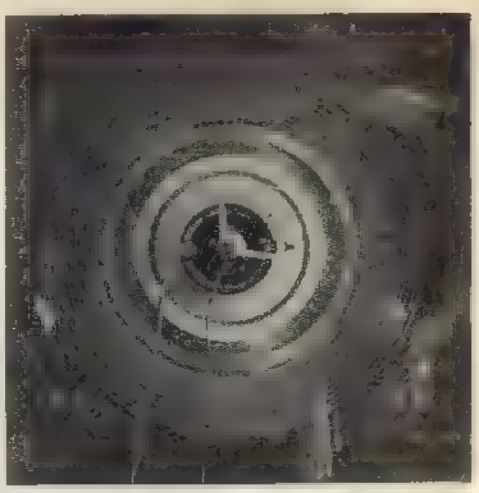


A mounting for the forward part of the fuselage for the Gnome.

develops and its steadiness of application due to the 220 pounds of flywheel, may be appreciated.

The cylinders with their flanges are in one piece, of forged nickel steel, with the spark plugs, of a special type, which is unaffected by oil which may pass between the cylinders and pistons by centrifugal force, are in the heads, beside the exhaust valves.

The inlet valves are automatic and are supplied with weighted levers which counteract the effect of centrifugal force. They are easily accessible through the top of the cylinder. The exhaust valves are likewise provided with weights to neutralize the effect of centrifugal force.



End view of the Gnome revolving aviation motor in action.

The magneto is gear-driven, as is the oil pump. The carburetor, which has an automatic air valve, is placed at the end of the hollow crank shaft. The motor is mounted on the forward part of the fuselage, the crankshaft acting as an axle upon which it revolves.

The Call Aviation Engine

The Aerial Navigation Co. of America, of Gerard, Kansas, has brought out the "Call" Aviation Engine, as a result of much experiment, not only in perfecting it, but in using other aeronautical engines. The result is a motor of the regular opposed cylinder type, the same type as the famous Darracq, with which Santos Dumont's machines are equipped. It is made in two models—2-cylinder 45 h. p. weight 135 pounds, for $700, and 4-cylinder, 90 h. p. weight 225 pounds, for $1,200. Bosch Magneto ignition is $50 and $100 extra.

The company makes the mixtures for their castings, and the castings themselves The company states that before deciding to put in their own foundry they corresponded with some thirty manufacturers of gray iron castings without finding one to furnish the desired grade.

The Cylinders.

The cylinders have a bore of 6 inches and a stroke of 5¼, with mechanically operated inlet and exhaust valves. The special vanadium alloy grey iron cylinders are machined to a perfect fit, both inside and out, and are pressed into a water jacket of a specially strong grade of Magnalium, the lightest and strongest alloy of aluminum

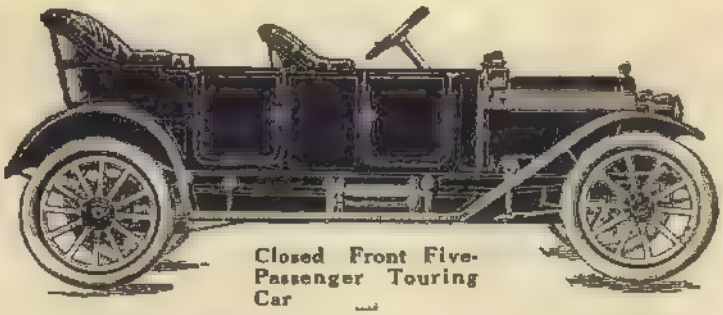
As shown by the illustration, the cylinders are pressed in from the top. For about one half the way down they are of ample thickness proportional to the size of the cylinder, while beyond, where there is no explosive stress, they are about one half that thickness. At the top of the cylinder is an additional shoulder machined to fit with a water-tight connection into the magnalium water jackets.

This construction is very much stronger than other light weight designs, giving a cylinder of about one half the weight per horsepower of any other type, it is claimed. It also avoids the danger of leakage, and constant giving away at the joints encountered in the usual copper or other sheet metal water jackets. As will be observed, the iron cylinder is supported along its length by ribs or flanges extending inwardly from the magnalium water jacket and fitting tightly against the machined outer surface of the iron cylinder, thus strengthening the explosion chamber.

The cylinder heads are of the same construction as the cylinders, the main part being of magnalium, thoroughly water-cooled and, where adjacent to the explosion chamber, lined with a circular plate of vanadium grey iron. Both valves are in the head, and are mechanically operated. They have a diameter of 2 inches, and lift ⅜ inch. The valve seats are water cooled, while the valve cages are air cooled, to secure lightness. These cages are cast in one piece, of vanadium grey iron, and are very thin, with cooling flanges to protect

THE MARMON

"The Easiest Riding Car in The World"



Closed Front Five-Passenger Touring Car

Results:

The Marmon, a comparatively small car, rated at 32 h. p. holds more long-distance racing records than any other car in the world, including many records in free-for-alls and the big-car classes.

The finest of materials and the most thoroughly accurate workmanship enter into the Marmon, as a matter of course.

SOME OF THE MARMON VICTORIES

Savannah Challenge Trophy—Savannah road course, Nov. 11, 1910. 276 8 miles in 263¾ minutes 63 miles per hour, without a stop.

Cobe Cup Race—Indianapolis Speedway, July 1910, stock chassis up to 600 cu. in. 200 miles in 6[illegible] min. 26.1 sec. Broke record over 10 min 73.47 miles per hour. Marmon first with two tire stops, Marmon second, one tire stop

Wheeler & Schebler Trophy—Indianapolis Speedway, May 1910, open up to 600 cu. in. 200 miles in 166½ min. 72 miles per hour. One stop for fuel

Vanderbilt-Wheatley Hills Trophy—Autumn of 1909 stock chassis 231 to 300 cu. in. 189 6 miles in 190 minutes without a stop. 59 87 miles per hour

Atlanta Speedway Trophy—Atlanta Speedway, May, 1910. 200 miles in 182½ min without a stop. 65 4 miles per hour

Atlanta A. A. Trophy—Atlanta Speedway, autumn, 1909, 120 miles in 109 minutes, without a stop. 66 05 miles per hour

Remy Grand Brassard and Trophy—Indianapolis, July, 1910, 100 miles in 80 min 40.7 sec. 74 38 miles per hour Marmon first with two tire stops; Marmon second without a stop

Remy Grand Brassard and Trophy—Indianapolis, May, 1910. 50 miles in 42½ min. 70.58 miles per hour. Marmon first and second.

Vanderbilt (Donor's Trophy)—Autumn, 1910. 278 08 miles in 256 min 23 sec.

Los Angeles Grand Prize—L. A. Motordrome, April, 1910. Stock chassis up to 600 cu in. 100 miles in 76½ min., without a stop. 78.6 miles per hour Breaking world's record regardless of class. Marmon "32" with 318 cu. in. displacement

Two Hours' Free-for-all—Los Angeles Motordrome, April 1910. 148 miles in 120 min., without a stop. 74½ miles per hour

Fifty Miles Stock Race—L. A. Motordrome, April, 1910. 50 miles in 39 min 56.55 sec., without a stop. 75 2 miles per hour Marmon first and second.

Hundred Miles Stock Race—L. A Motordrome April 1910. 100 miles in 85 min. 22 sec., without a stop 70½ miles per hour.

Ascot Trophy Ascot Horse Track April 1910. 100 miles in 103 min without a stop 58 25 miles per hour.

Ascot Fifty Miles April, 1910 50 miles in 50 min [illegible] sec. 59 82 miles per hour

New Orleans Prize—Horse Track, November, 1909. 100 miles in 107 min without a stop. 56 23 miles per hour.

New Orleans Fifty Miles Horse Track November, 1909 50 miles in 54 min. without a stop. 55 56 miles per hour

Kane County Trophy Elgin Road Course, August 20, 1910 189 miles in 184 min 46 sec 58.1 miles per hour

Atlanta City Trophy—Atlanta, November 4 1910 200 miles in 171 min. 13 sec 70 miles per hour

Savannah Challenge Trophy—Savannah Grand Prize Road Course, November 11 1910. 276 8 miles in 263 min. 39.98 sec. Average 63 miles per hour Marmon first without a stop (World's record for non-stop road race.)

Marmon cars have won many five, ten, fifteen, twenty and twenty five mile races in the meets at Indianapolis, Los Angeles and Atlanta.

NORDYKE & MARMON CO. (Estab. 1851) Indianapolis, Ind.

Licensed under the Selden Patent *Sixty Years of Successful Manufacturing*

THE MARMON

"The Easiest Riding Car In The World"

Closed Front Roadster with Trunk, Marmon '11

Reasons:

It is the easiest riding car in the world, which means comfort to driver and passengers and great durability of mechanism. The car has made and lives up to this reputation for easy riding as testified to by all Marmon owners.

It is an evolution of the highest degree of motor car engineering ability.

It is thoroughly rational in power, weight and carrying capacity.

A car with similar power and carrying capacity cannot be designed to weigh less and still maintain a proper factor of safety at all speeds.

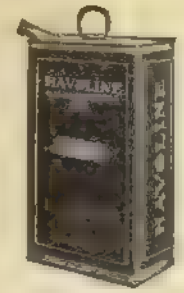
Any greater weight in a car of this size would be entirely unnecessary, and a detriment rather than an advantage.

The design is strikingly simple, thus minimizing weight, loose and wearing parts, and probabilities of getting out of order.

Extreme accessibility of all units and parts and complete protection from dust and mud have been successfully accomplished. No car has ever been designed with more thought bestowed upon these qualities.

NORDYKE & MARMON CO. (Estab. 1851) **Indianapolis, Ind.**

Licensed under the Selden Patent *Sixty Years of Successful Manufacturing*



AUTOMOBILE CYLINDER OIL

¶ Automobile Cylinder Oil is simply required to lubricate—and burn up cleanly

¶ The presence of body makes an oil lubricate

¶ Freedom from impurities makes it burn cleanly

HAVOLINE OIL

¶ Possesses the same lubricating body as other oils (light, medium, and heavy); but it burns cleaner because it has been filtered freer from carbon impurities. *That's why*—

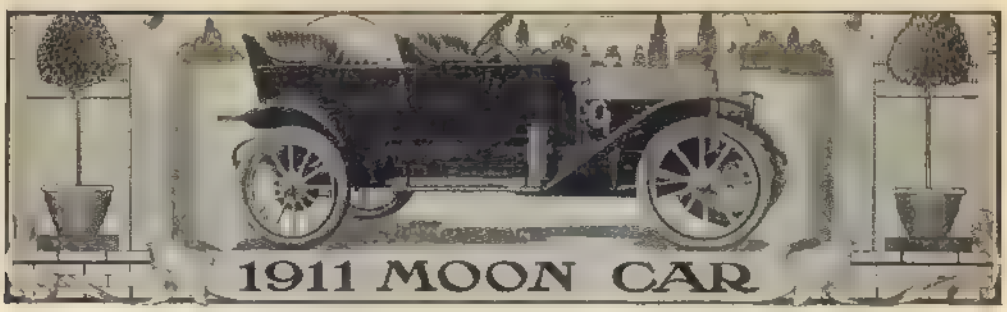
"It Makes a Difference"

Write for booklet on "The Common Sense of Automobile Lubrication"

HAVOLINE OIL COMPANY, 135 William St., New York

All Garages — All Dealers

W. P. FULLER & CO., Agents all Pacific Coast Cities



According to general practice in the automobile manufacturing line the Moon Motor Car Co., of St. Louis, Mo., are continuing the same models for 1911 that were so successfully marketed during the season of 1910. These are the model "45" and the model "30." Mechanically, these cars have undergone very few changes, as their performances in the hands of experienced as well as inexperienced owners were so satisfactory that the Moon Co. decided to make only such changes as were absolutely necessary for increased efficiency, quietness in running and for placing the cost of maintenance at the minimum.

Keeping abreast of the times in motor car development, the Moon Co. has worked out on these two models a number of refinements which add to their smooth running, simplicity of operation, and convenience and comfort of the passengers. As the highly proven efficiency of these cars has been well established, the changes made on them for 1911 have brought them up to a more conclusive and settled standard.

The "30."

By slightly redesigning the T-head motor used in the 30 horse power car, the weight of the motor complete has been reduced 72 pounds. The valve ports have been increased in size and the valves are two inches instead of 1⅞ inches as before. Increasing the size of the valve ports, with the increase in the lift of the valves and the change in cam design, has increased the power of the "30" motor 25 per cent., without changing the bore and stroke. Roller valve lifters are now used in place of the mushroom type, and this, in addition to the change in the cam outline, has made a great improvement in the reduction of the noise. Instead of the plain spur gears previously used, helical gears are now used.

The model 30 motor is suspended directly from the main frame on two I-beam drop forged cross members. The cylinders are cast in pairs with integral waterjackets and bolted to a cast aluminum crankcase which is divided horizontally into an upper and lower half on a line with the crank shaft. The valves are on opposite sides, have removable valve guides, of the adjustable type and driven from separate cam shafts inclosed within the crank case. The camshafts have three bearings each, the cams are forged integrally and gears which drive them are thoroughly inclosed at the forward end of the motor. Each piston has four eccentric rings above the piston pin, which is doubly securely anchored therein. A phosphor bronze bushing is employed at the upper end of the connecting rod and the lower connecting rod bearings are split horizontally, lined with Parson's white bronze, and the lower half is held in place by four bolts.

The 1911 Moon Car—"45" Foredoor.

This is a splendidly finished product, of large and durable construction. The motor is the characteristic valve-in-the-head 4¾ x 5 Moon motor. The clutch is of the multiple disc type, attached to the flywheel and the selective sliding gear set rests with the motor on a subframe. The wheels are 36 inches, and the wheel base 121 inches.

Attention is called to the method of attaching the motor crankcase to the I-beam cross members at either end of the motor, shown in illustrations of motor. There are two bolts at each end, which extend to the base of the crankshaft bearing. The crankshaft is a solid drop forging supported on three bearings, which are independent of the lower detachable portion of the crank case.

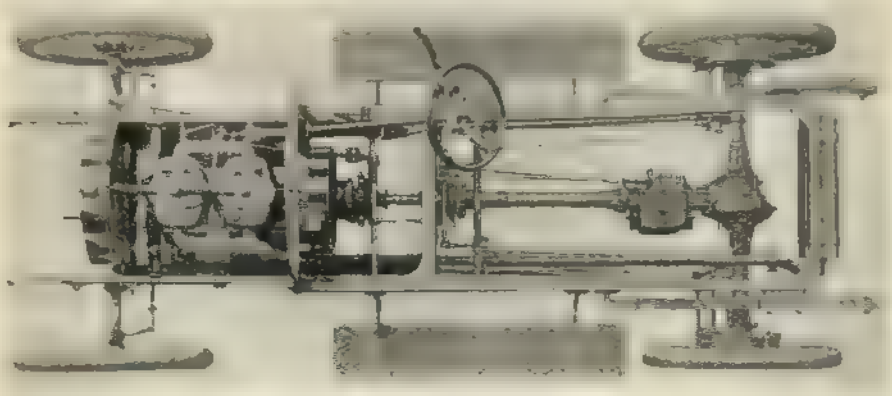
Lubrication.

The lubrication system is of the circulating type. The lower portion of the crankcase is subdivided horizontally, the upper division containing splash compartments into which the ends of the connecting rods dip, and the lower division being simply a reservoir where the excess oil accumulates to be strained and re-circulated. The oil pump is of the gear type on the outside of the crankcase and driven by means of a vertical shaft and bevel gears from the exhaust camshaft. This pump draws the oil from the reservoir and forces it into the upper division. When the oil in this division reaches a certain level it overflows into standpipes and returns to the reservoir to be strained and again circulated

The dipping of the connecting rods into the oil in this upper division causes a spray or mist of oil to be present in all parts of the case while the motor is in operation; large oil pockets provided over each crankshaft bearing are designed to catch this spray, and being almost continually filled a copious supply of oil is fed by gravity to these bearings at all times. Holes are drilled on top of the lower connecting rod bearings so that the oil which runs down the rods keeps the lower end bearings well supplied while all other mechanisms in the case and cylinders are enveloped in this mist of oil. There are four oil grooves at the bottom of each piston for distributing the oil over the cylinder walls; leakage of the lubricant from the rear end of the motor is prevented by an oil ring cut on the crankshaft which throws the lubricant by centrifugal force into a circular groove surrounding it, from which it drains back into the crankcase proper. The capacity of the reservoir is three gallons.

Cooling.

Cooling is by means of a forced water circulation maintained by a bronze water pump of the centrifugal type. This pump is supported upon a bracket cast integrally with the crankcase and is driven by shaft and a gear enclosed with and driven off the left camshaft gear. A vertical round-tube radiator is a feature of this system; and the water manifolds are of the utmost simplicity, the return sections on the top of the cylinders being cast integrally with the plates that cover almost the entire top portion of the cylinder jackets and being separated between the cylinder pairs so that individual assembly or disassembly is facilitated. No fan is required.



Plan View of the 1911 Moon Model "30" Chassis.

This shows the general layout of the Model 30 chassis. Attention is called to the absence of inaccessible paraphernalia around the motor, the desirable position of the steering connection link behind the real axle, the durable pressed steel running board and the upswept rear portion of the frame, this frame also being narrowed in front to obtain a short turning radius. It also is interesting to note the generous width of the side members of the frame throughout the greatest portion of its length, the simplicity and symmetry of all control rods, and of brake, gear-set and clutch connections.

Ignition.

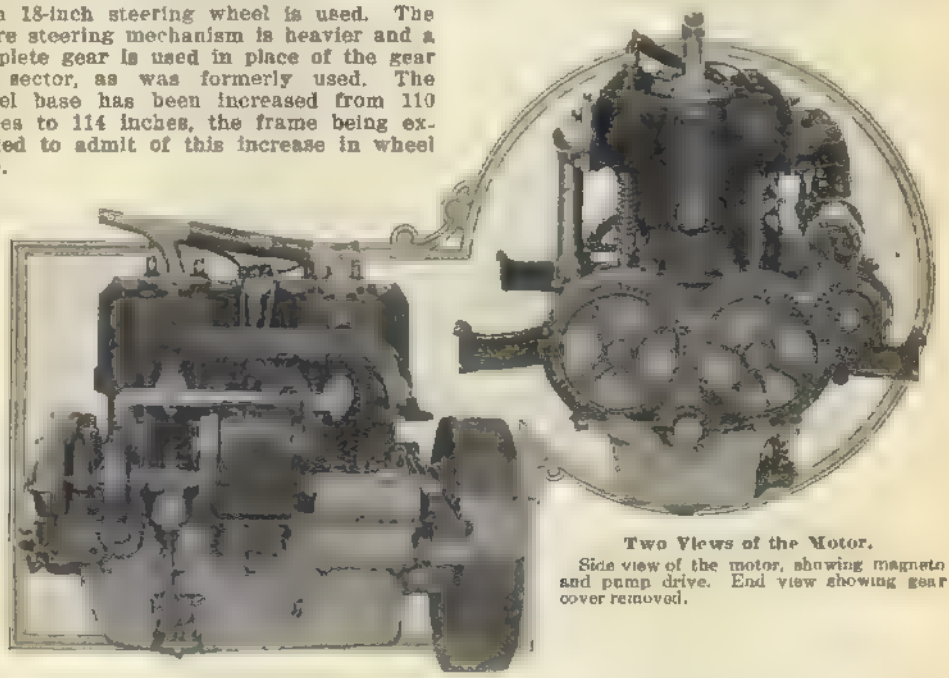
Jump spark ignition is employed with dry cells and a Remy magneto used in dual combination with a single unit coil and a single set of spark plugs. The magneto rests on a strong bracket which is a part of the crankcase and is driven by the shaft which passes through and drives the water pump. Its position is convenient, in that it may be readily inspected and the ignition cables leading to the spark plugs are comparatively short and direct. The new arrangement of the control rods is over the rear support of the engine.

In place of the expanding band clutch used in 1910 model "30," this car now carries a multiple disc clutch of the same type as has been used in the higher priced Moon

"45" for the past five years. This is exactly the same clutch as used in the "45" and consists of 52 discs running in oil and inclosed in a bronze housing bolted direct to the fly wheel by three bolts.

The foot and emergency brakes are applied on the drums attached to the rear wheels. By making the bands universal, so as to grip the drums concentrically, their effectiveness has been increased.

An 18-inch steering wheel is used. The entire steering mechanism is heavier and a complete gear is used in place of the gear and sector, as was formerly used. The wheel base has been increased from 110 inches to 114 inches, the frame being extended to admit of this increase in wheel base.



Two Views of the Motor.

Side view of the motor, showing magneto and pump drive. End view showing gear cover removed.

Improvements on the "45."

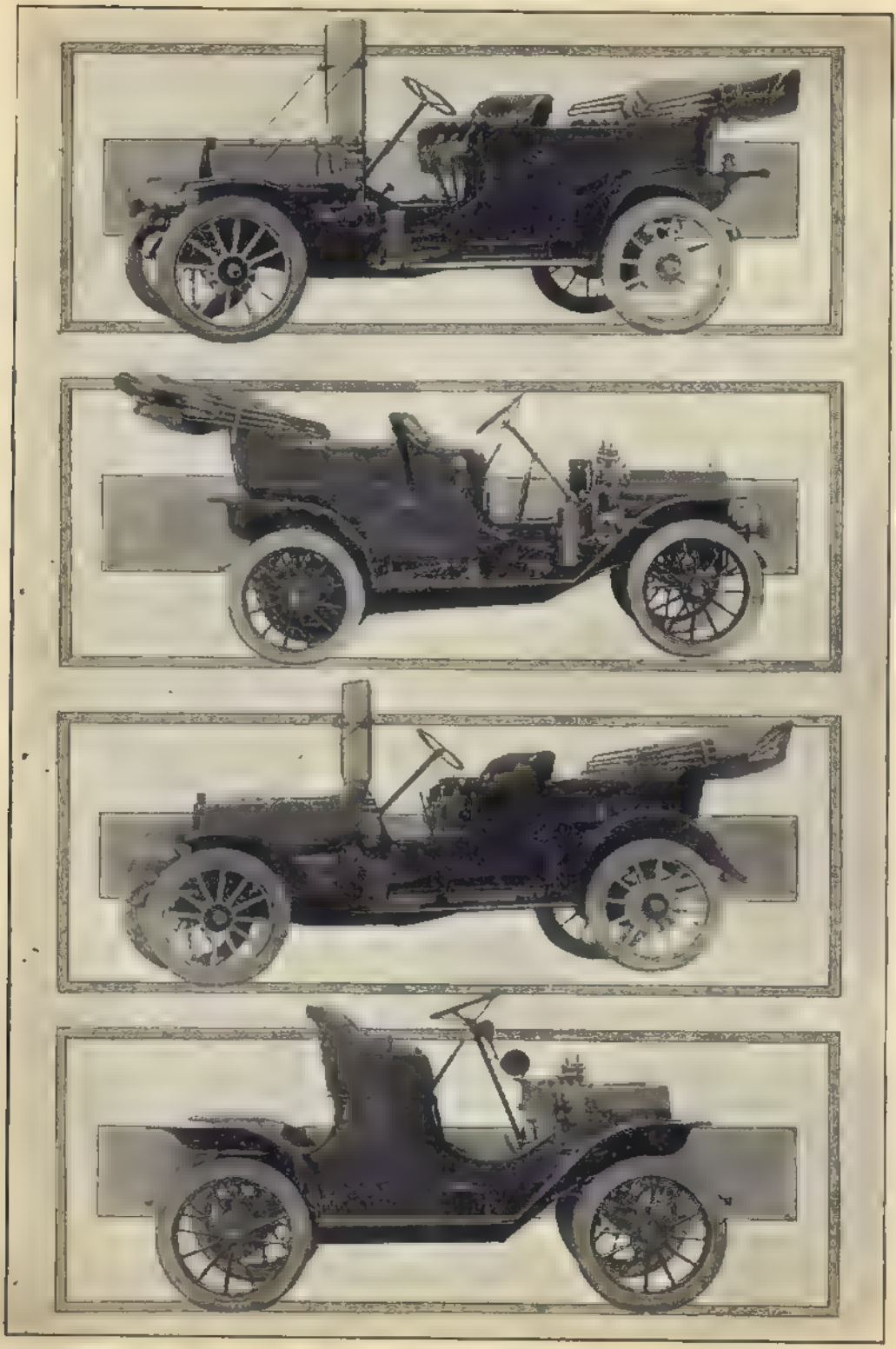
The most noticeable improvement in the motor of the Moon "45" is in the method in driving the magneto and water pump. These are now located at right angles to the crank shaft and driven with one gear off the vertical cam shaft. This change has allowed the discontinuance of the pump gears formerly employed. The lubricating system has been retained in precisely the same arrangement as on former models for the past four years, the crankshaft being drilled as heretofore. The force feed lubricator, instead of being located on the dash and driven by an extension of the cam shaft, is now operated by two spiral gears, which leaves the dash perfectly plain, except for the single sight feed. The exhaust manifold has been remodeled so as to leave fewer bends and angles to impede the progress of the exhaust gases

One of the most noticeable changes in the Moon "45" is the method of drive and rear spring suspension. Three-quarter springs are used in the rear instead of full elliptic as before, and the axle drive is direct through them to the frame, doing away entirely with the drive rods and the familiar V type of drive with the ball and socket, which was so long a Moon characteristic.

The touring car bodies for the "45" have been given two inches more room in the tonneau and the entire tendency has been in a modification of both the straight line and convex type. Foredoor and torpedo types have been added to the selection of bodies.

As for the difference in the Moon models, the 30 is a leading favorite, being a moderate priced car, with a simple and up to-date 4¼ by 5-inch motor, multiple disc clutch, shaft drive, with the propeller shaft enclosed in a torsion tube, a three-speed selective gear set in unit with the semi-floating rear axle, a modern pressed steel frame resting on three-quarter scroll elliptic springs in the rear, an I-beam axle, adjustable worm-and-gear steering mechanism, 34-inch wheels and 114-inch wheel base.

The model 45 is a higher-priced, splendidly finished product, which differs generally from the 30, in that the motor, gear set and rear axle are separate units, and the car has the advantages of being larger and heavier in construction. The characteristic model 45 valve-in-the-head, 4¾ by 5-inch Moon motor, with its overhead cam shaft, furnishes the power in this model, and transmits it through the multiple disc clutch attached to the fly wheel and a selective sliding gear set that rests with the motor on a sub-frame. A propeller shaft, with two universal joints, is employed between the gear set and the cambered floating rear axle. The rest of the frame and running gear design is similar to that of the model 30, except that the wheels are 36 inches in diameter and the wheel base 121 inches.

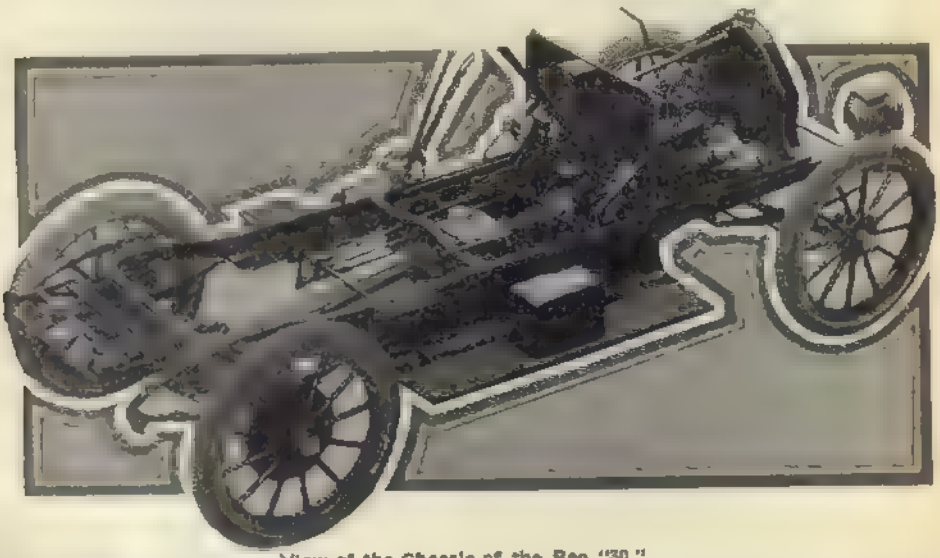


A Group of 1911 Reo Models.

At the top, the 4 cylinder '30' touring car—price $1,250. Below it is the 2 cylinder car $1,000. Next to the bottom is the 1911 4-cylinder roadster which sells for $1,250, while at the bottom is seen the small single cylinder Reo runabout.

The Left Hand Driven Reo 30 for 1911

One of the first companies to make a left hand driven gasoline pleasure car was the Reo Motor Car Co., of Lansing, Mich., whose Reo car is put on the market by the R. M. Owen Co., of New York City. In this car, realizing the disadvantages of the right hand drive, the steering wheel has been placed on the left side, and not only that, the change gear and brake levers are placed on the left side, operated with the left hand. Thus, the driver is placed in what we have long advocated as the best and most logical position for the greatest safety in driving—toward the center of the road, where vehicles pass, enabling him to see exactly the space between his own wheels and those of passing vehicles. Not only this, but with the car drawn up at the curb, neither the driver nor the passenger in the front seat has to walk around in the street, through slush or mud, to either enter or leave the car.



View of the Chassis of the Reo "30."

The pressed steel frame is upswept over the rear axle, giving a lower center of gravity and easier riding. The luggage carriers and brackets for the mud guards are rigidly attached to the frame. Notice the position of the gear shift and brake levers. Left hand control does not complicate the design. The wheel base is 103 inches.

In fact, the advantages of this construction are too numerous to be mentioned here.

The position of the change gear and brake levers—at the left—is an entirely logical one, and adds complication to neither the design of the mechanism nor its operation. It is just as easy to learn to operate these levers with the left hand as with the right, and they are not in the way, as they would be if placed in the center, the front seats being left clear and free.

1911 Improvements.

This left hand system, which has long been a feature of the Reo, will of course suffer no change in the 1911 models, but a number of valuable improvements have been made in the models for the coming year. The selling organization keeps especially close to the owners of Reo cars, and, with the co-operation of the engineering department of the factory and observation of the needs of the public and the performances of the several thousand Reo cars, valuable improvements are added, besides the natural refinements.

The Models of the "30."

Four models of the Reo "30" enable the purchaser to select the car which best suits his needs. The five passenger touring car combines light weight and easy riding with power and speed, and is roomy and comfortable. It sells for $1250. The four-passenger roadster sells for the same price, and is the same except that it is built for only four passengers (with plenty of room), has a hooded dash, and is about 100 pounds lighter. With the same wheel-base as the touring car, it is closer coupled, placing the tonneau seat slightly in front of the rear axle and making the car very easy riding. An additional feature is that the tonneau is detachable, and either a box or a turtle deck may be attached.

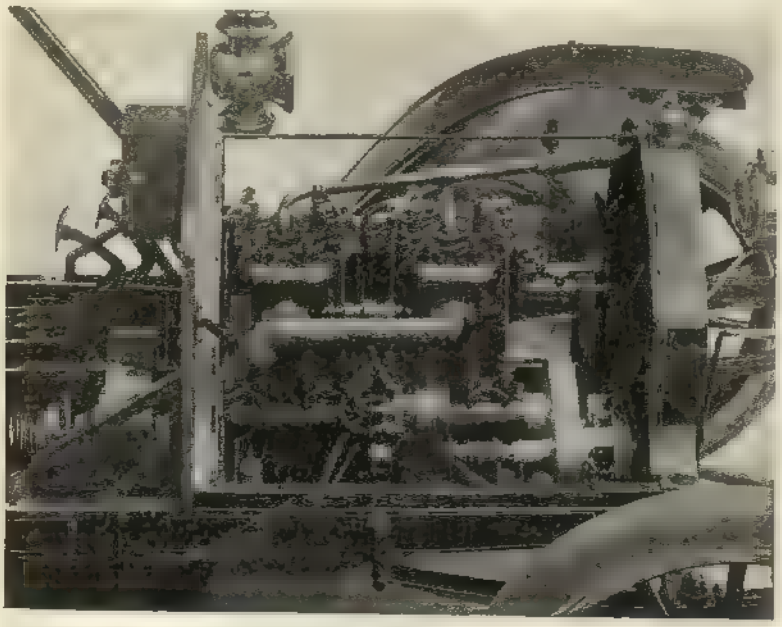
Two town cars complete the Reo "30" line. Landaulet and limousine, selling at $2000, they are luxuriously appointed, are light, powerful and comfortable.

The "30" Motor.

The Reo "30" motor has been designed with particular reference to the saving of weight and conservation of power, and is exceptionally efficient. Four cylinders cast

in pairs avoid the one extreme of the single-cylinder construction with its numerous packed joints to keep tight and its length, and the other extreme of the en bloc construction, which makes repairs expensive and does not, in many cases, allow adequate space for proper adjustable bearings. The bore is 4 inches and stroke 4½.

The connecting rod is long, thus reducing the side thrust of the piston on the cylinder walls with its consequent wear, loss of power and lubrication. The valves are large, and the inlet is placed in the head of the cylinder, where plenty of room is afforded for a valve large enough to admit the proper charge at high speed. The exhaust valve is on the side, and its seat is a part of the cylinder, and is thoroughly water-jacketed.



View of the Motor of the Reo "30."

This 4x4½ motor develops 30 horsepower. Ignition is by low tension magneto, with auxiliary batteries. The valves are mechanically operated, and are large. The crank case being cast in one piece makes the engine rigid and avoids leakage of oil. Two hand holes allow of easy adjustment of the connecting rods

Both valves are mechanically operated, and open quickly. The cam-shaft gear is fastened to a flange integral with the cam-shaft, avoiding keys getting loose.

Particular attention has been paid to the cams in the 1911 motor, and they have been designed to be as quiet as possible.

The cam-shaft is of large diameter, running in three bronze bearings, and is easily taken out without removing the cams. The spiral cam gears are especially free from noise. The cam-shaft is offset to do away with side thrust on the valve lifters

Lubrication.

One of the important changes in the 1911 motor is in the lubrication system—a slight change has been effected, so that plenty of oil is given at low speed, without flooding at high speed.

There are no pipes or leads to get loose or leak, the system being self contained, inside the crank case. A large plunger pump, driven from the cam-shaft, through an eccentric, delivers oil from the reservoir to the three main bearings of the motor and to the face of the spiral cam-gears. The oil then gravitates to partitioned reservoirs in the bottom of the crank case, where it is maintained at a constant level. Little scoops at the bottom of the connecting rods send the oil in a fine spray to the pistons and cylinders, splash plates governing the amount.

This is a particularly simple and effective oiling system, without stuffing boxes or additional driving gears to require attention, and adjustment. The pump is self-cleaning, and the motor is oil tight. All outside bearings have recesses and oil-leads for collecting superfluous oil and returning it to the crank case, and protecting caps are fitted to keep out dirt.

Carburetor.

Another 1911 improvement is in the carburetor, which has a hot-air intake, avoiding cold weather troubles and making it possible to use low grade gasoline when no other can be obtained.

Clutch and Transmission.

Much attention has been paid to this important part of the mechanism. Of the multiple disc type, more discs have been added to the 1911 clutch, giving additional

surface, making the clutch hold better and giving more durability. Instead of one heavy external spring, there are three light external springs, which produce positive action without slipping. Also, the clutch is entirely self contained and can be removed in a very few minutes without in the least disturbing either transmission or motor The clutch springs do not press upon either transmission or motor, avoiding end thrust.

sion tube and connected with the transmission by a universal joint. This connection has been made in such a way that there is no torsional strain on the universal joint, and the joint is packed in lubricant fed to it from the transmission case.

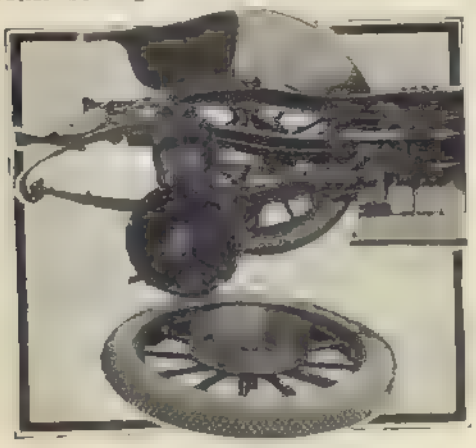
The torsion tube is secured to the rear axle in such a manner that the alignment of the driving pinion and driving gear may be corrected without taking the axle apart

View of the rear axle construction of the Reo "30," showing accessibility of the bevel gear.

Alternated discs of bronze and steel are pulled apart for disengagement instead of simply being allowed to come apart, and they are sufficient in number to afford plenty of surface. The clutch takes hold smoothly and positively and lets go easily when released. A double universal joint, between clutch and transmission preserves the alignment.

The transmission has three speeds forward and reverse, and is of the swinging selective type. The gears are noiseless and easily shifted, and a 1911 improvement is in the shape of a slightly heavier shifting lever to prevent damage at the hands of inexperienced drivers.

The driving shaft is nickel steel, hardened and heat treated, running on Timken roller bearings at each end inside the tor-



Rear Axle.

End view of the rear axle of the 1911 Reo, showing the large brake surface and the three-quarter elliptic springs. The front springs are semi-elliptic, axle I-beam drop forged, with ball bearings. Rear wheel bearings are roller. The 34 inch wood artillery wheels are fitted with 3½x3½ Michelin quick detachable tires with Goodyear rims

and any desirable adjustment can easily be made by removing the cover on the axle housing and unlocking the adjustment rings.

Control.

As stated before, the left hand control is a feature of the car. The steering-wheel is of hard rubber and aluminum. Spark and throttle levers are easily controlled with the fingers of the hand which operates the wheel.

The emergency brake-lever is located outside the transmission control-lever and operates the large and effective interior brakes on the rear wheels. This lever also releases the clutch when the brakes are applied. The right-hand foot-lever controls the outside brake on the rear wheels, the left-hand foot-lever controls the clutch. There is also a muffler cut-out and, in addition to the regulation throttle-lever on the steering-post, a foot-accelerator.

The steering-gear is extremely simple and strong. In the worm-and-sector type, commonly used, the lost motion cannot be taken up without putting in new parts. In the Reo steering gear there is but one adjustment, which is easily accessible, and which perfectly takes up all lost motion that may be caused by wear

The "23" Runabout.

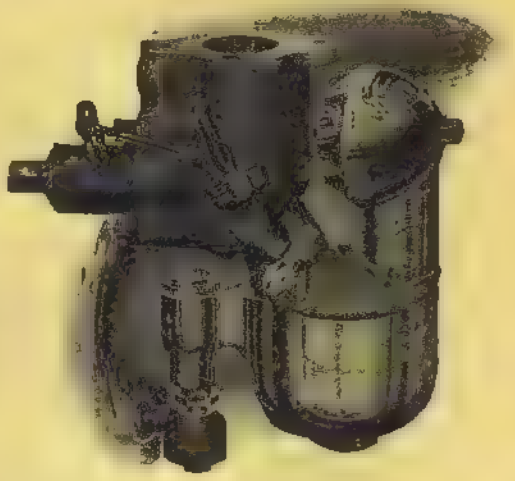
Built on substantially the same lines as the Reo "30," but with a slightly smaller on the rear axle instead of in the middle of motor and with the transmission located the car, the Reo "23" runabout is a powerful, speedy light four-cylinder car with the same qualities as the Reo "30." The smaller motor is balanced by considerably less weight, so that its ability and general performance are the same as the "30." The car sells for $850

Other Models.

Besides the "30" and "23" models, a 2-cylinder touring car and a one-cylinder roadster are made by the Reo Company. These, selling for $1000 and $500, respectively, have the characteristic Reo features

MARVEL CARBURETER
THE NAME DEFINES IT

"It's a Marvel"



That is what the salesman of an automobile will tell you if he wants to give the best in carbureters.

See that your 1911 car is equipped with the never-freeze carbureter.

In just 30 days of cold weather the Marvel principle has been proven correct.

HEAT and a POSITIVE HEAT and THAT HEAT under CONTROL, is what your carbureter must have to run well in cold weather with the low grade-gasoline. The Marvel takes its heat out of the exhaust and runs it through a heat jacket with a large copper tube. The amount of heat is controlled by the throttle.

MARVEL CARBURETERS run as well in the WINTER as in the SUMMER and THAT IS WHY the MARVEL HAS MADE GOOD.

Special Types for Hupmobiles, Fords and Buick 10's.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

MARVEL CARBURETER
THE NAME DEFINES IT

The Marvel is far in advance of the times

The Manufacturers of the Marvel knew that the low-grade gasoline would be difficult to vaporize in cold weather. Therefore, they designed the Model "H" Marvel with a LARGE HEATING jacket to meet this contingency.

Heretofore, carbureters have been heated by water from the engine or from exhaust gases taken through a SMALL copper tube.

The exhaust gases, passing through a small tube cool, before they do the work intended for them.

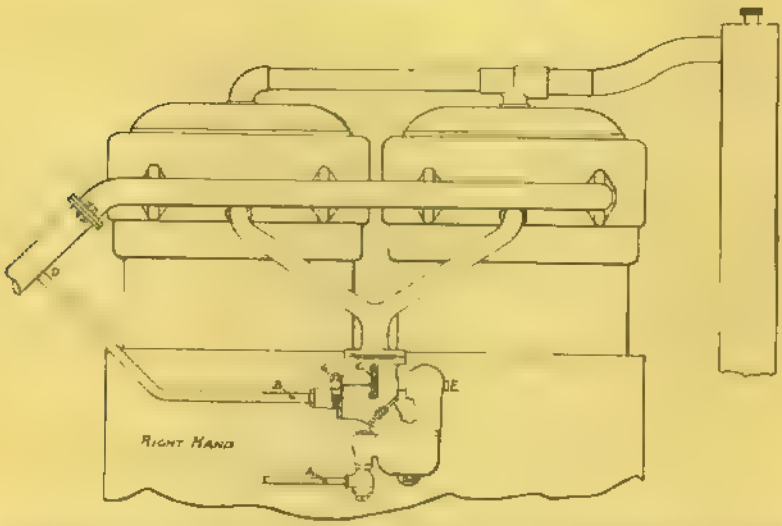
We realize that the heat had to be positive and quick in its action. We then experimented to find this phase. The result was Model "H" Marvel.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

MARVEL CARBURETER
THE NAME DEFINES IT

The Marvel Method of Heating



The exhaust gas from the Manifold is positive and quick.

The gas is taken through a $\frac{9}{16}$" copper tube at "D" and connected to the carbureter at "B" and taken out at "E." Gas taken through such a large tube must be controlled.

On the Marvel this is controlled at "F" and connected to the throttle "C."

Investigate the Marvel.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.

MARVEL CARBURETER
THE NAME DEFINES IT

The Most Dependable Carbureter

Right now, during the cold weather, the Marvel Carbureters are giving perfect satisfaction.

Forty degrees' change in temperature does not affect the carbureter.

You don't have to adjust it every morning, because the MARVEL METHOD OF CONTROLLED HEAT establishes a UNIFORM CONDITION at the MANIFOLD in ANY kind of weather.

What the Marvel Means to You

It will not load up at any range of speed.

It will throttle down at any time of the year.

It will give more mileage per gallon of gasoline.

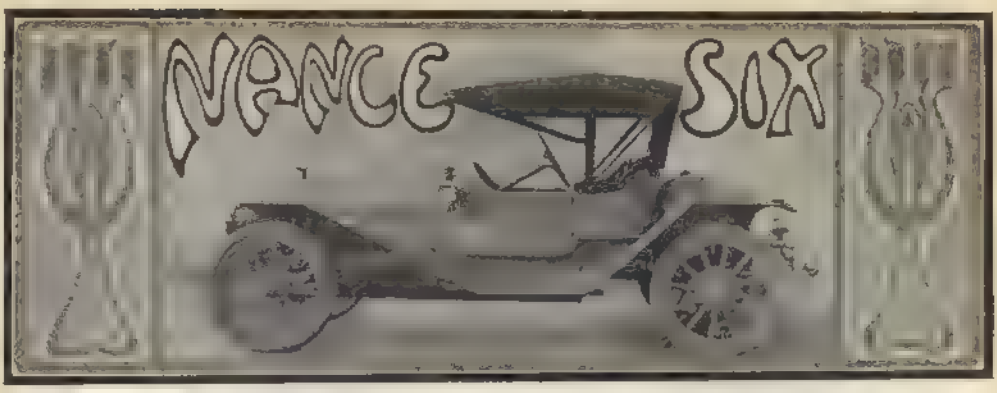
It is always DEPENDABLE and will NEVER FREEZE.

It carries a guarantee that it will give satisfaction or the purchase price refunded.

MORE POWER—MORE FLEXIBILITY—MORE ECONOMY.

Marvel Carbureter Co.,

2224 N. Alvord Street
INDIANAPOLIS, IND.



Since the coming of the six cylinder motor, more and more automobile makers have been turning their attention to this, the most smooth running, the most obedient to the throttle and withall most satisfactory engine yet devised for motor car propulsion. None of the six cylinder car makers have ever reverted to four cylinder types, and each year sees an increase in the ranks of the six cylinder car makers. There is a reason,—the total absence of vibration, the even pulling power, the elimination of noise and the ability to throttle down to slower than a walk, yet with possibilities of instant acceleration under the action of the throttle alone, have rapidly endeared the six cylinder car to all those of the buying public who were fortunate enough to have the wherewithall to purchase this most expensive type of motor car. Today, however, we find the Nance Motor Car Co., 1208-1212 Vine street, Philadelphia, offering an entirely new and strictly high grade six cylinder car at a price which brings a six cylinder car within the reach of the average motorist. The new machine is known as the Nance Six, and embodies in its makeup only such material and units as are well established on the American market and whose reputation and sterling worth have been proven by years of satisfactory and efficient service.

The personnel of the Nance Motor Car Co., includes the names of men who will be recognized by those familiar with the industry as being very prominent in the development of one of the most successful six cylinder cars made in this country. The officers of the new concern are as follows: H. B. Larzelere, president and general manager; Walter D. Larzelere, vice-president; Walter Bassett Smith, treasurer; A. Hamilton Bishop, Secretary; M. H. Adams, sales manager and N. B. Ringler, superintendent.

The Nance Motor Car Co., has taken the stand that the Nance Six constitutes the degree of motor car value which the discriminating American public will soon exact from the automobile makers who desire to remain in the automobile business. The question has been asked them how they can make any money selling the Nance Car completely equipped, including top, at such a low price as $1900. The answer will be found in the conditions under which the Nance Six is constructed.

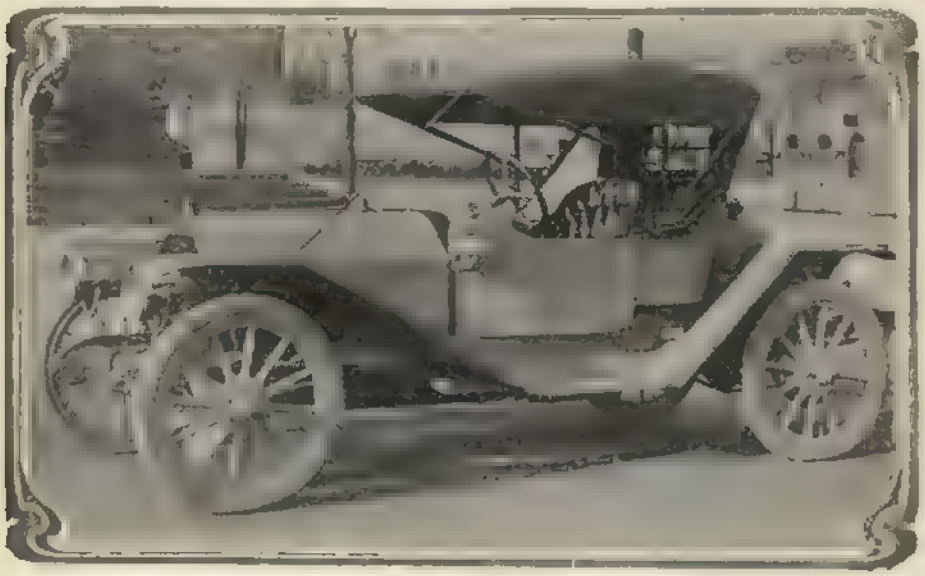
Front View of Nance Six.

Fig. 1. Attention is called to the very sturdy Elliot type front axle, and to the general neat appearance of the car. The steering arms and cross connecting link are well protected behind the front axle, there being a road clearance of 10 in.

The Nance Co. bases its operation on the belief that the automobile business can be conducted successfully in the same conservative manner and along the lines of other standard manufacturing. The enormous overhead expense, the excessively expensive advertising and methods of selling, it is believed can be dispensed with. While the Nance Company control the design and manufacture of the many small parts peculiar and individual to the Nance Six, they purchase the vital units and

more important parts from the various specialists, each under a guarantee as to accuracy and quality, which would be wholly impossible of attainment in any shop unless its entire time and attention were devoted to this one specialty. This means that the Nance Company believes that it can place on the market a better and more reliable car by using parts made by experts in their particular lines and whose entire time and energy have been spent in developing their specialty. At best an automobile maker can manufacture but a few of the parts, all agreeing that the tires, wheels, axles, frames, electrical apparatus, etc., can be much more satisfactorily made by specialists than they can make them themselves. Many of the best cars are those which are well and carefully designed, using the best that the market affords, and the Nance Six design and specifications are the result of years of experience of the department heads of the company, men who have been connected with the industry from its beginning and have learned the short-comings of the various machines, as well as of manufacturing and selling methods during what might be termed, an extravagant past. The company has available in fire-proof vaults all patterns for duplicating parts, thus safe-guarding purchasers in the matter of obtaining speedy shipments should the makers fail to fulfill their contracts. The lack of overhead expenses and extravagant advertising and sales methods make possible the marketing of the Nance car at a price almost one-half of that which has been asked for six cylinder machines of its class.

In the following description it will be noted that nothing enters into the construction that is not well known to be of the highest grade. The machines are made in runabout and five-passenger touring car types, both of the up-to-date fore dore construction, based on a standard chassis of 122 inch wheel base. These machines are sold at the price mentioned fully and completely equipped ready for long distance touring, including an excellent quality, Chase leather, or Pantasote top with full side curtains and top boot. The standard equipment in addition to the top includes quick detachable rims, Bosch magneto and battery in reserve, 10 inch lens mirror search lights, two side oil lamps, rear signal lamp, foot rest, robe rail, large bell horn, and complete tool kit, comprising wrenches, jack, pump and tire repair outfit.



Nance Runabout.

FIG 2 This new six cylinder car with fore door body, ra[illegible] type guards and gasoline tank arrangement is fitted with a six cylinder motor, [illegible] by 4 1-16, developing 35 h. p. at 900 r. p. m. Transmission of power is through a multiple d[illegible] clutch se[illegible]e type three speed sliding gear, shaft drive to full floating rear axle. Fully equipped, including top and everything ready for the road $1900

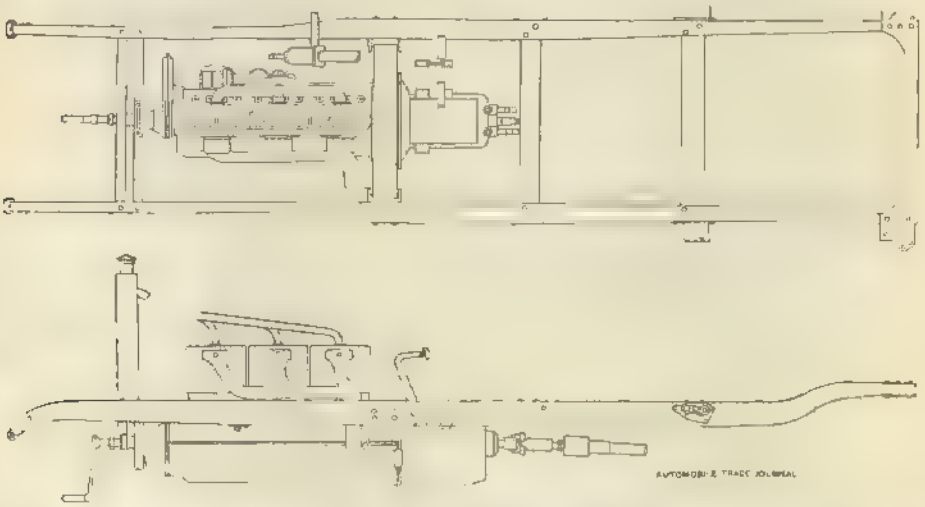
Unit Power Plant.

The power plant is of the unit type, mounted according to approved practice on a three point suspension. The motor is of special design being, it might be termed, a combination of the Brownell and Northway six cylinder engines. The cylinders are compactly cast, of the best grey iron, in pairs, and are superbly finished in hard baked grey enamel, making them very pleasing in appearance and so they can be readily cleaned by washing. Both valves are in the head operated by the usual vertical rods and rocker arms, but contrary to usual custom, these are nicely finished and nickel plated, giving a clean, neat appearance not often found even in the very highest priced cars.

The crank case, which is a substantial aluminum construction has integral arms extending toward the rear embracing the fly wheel, and to these is securely bolted corresponding arms integral with the three speed sliding gear case. These two arms provide two points of support for the motor unit assembly at the rear, being mounted on the frame side members. At the front the crank case rests at a single point on the forward cross frame member, thus giving the desired flexible three point mounting which insures absolute alignment of the motor crank shaft, clutch and change gear

Cooling.

The motor is efficiently water cooled by means of a gear pump; a Long Manufacturing Company's honey-comb radiator, which is ingeniously mounted on a flexible support so that no possible weaving or motion of the frame can cause it to leak. An efficient ball bearing, aluminum fan substantially mounted and flat belt driven aids in cooling. All connections are by extra heavy hose. It will be noted that the honey-comb type of radiator is ordinarily used only on high priced cars and is another evidence of the quality being supplied in the Nance



Partial Plan of Nance Chassis.

Fig. 3. This view shows the unit power plant construction, there being two points of support at the rear and one at the front; the change speed gear case is carried by integral arms extending from the engine crank case. It also shows the well gusseted hot riveted frame, it will be noticed that at the offset of the side frame members the top and bottom flanges are increased in width, giving additional strength. The top and bottom flanges of the rear cross frame members project beyond the frame forming a support for the ¾ elliptic rear springs.

shafts. No binds or stress can be thrown upon these members by slight deviations in frame alignment due to negotiating the most uneven road surfaces. The motor cylinders have a bore of 3⅝ inches by 4 1-16, each pair of cylinders is rigidly held to the crank case by studs and castellated nuts. The drop forged steel six throw crank shaft is mounted in four liberal sized Parsons white bronze die cast bearings.

Lubrication is by force feed and splash insuring positive oiling of every moving part; a special method has been adopted for taking care of the overhead rockers, each pair of rocker arms being supplied with a central oil hole, the arms being drilled so that the oil is conducted not only to the two main bearings of the rockers, but outwardly to the four ends, so that one oiling takes care of these six points. The change speed mechanism, differential and floating rear axle, as well as the multiple disc clutch, operate in oil baths.

Six. The area in this radiator is such that over heating is claimed to be an impossibility.

The well-known Stromberg careburetor, which needs no description, is employed, and is water jacketed, insuring proper vaporization of the fuel during cold weather. This carburetor is located on the right side of the engine and flange connected to a neat Y aluminum cast intake manifold. In the runabout, a large 27 gallon, heavy pressed steel tank is provided for the fuel, and in raceabout style, is placed in the rear of the front seat. In the touring car the gasoline is carried as usual in a suitable tank under the front seats the feed being by gravity to the carburetor.

Dual Ignition.

The ignition is by the latest Bosch dual system with battery in reserve, a single set of plugs being used in the sides of the cylinders. The advantages of the Bosch dual system, such as the push button start on the spark, fewness of parts, neatness of appearance on the dash, accessibility, etc.,

are too well known to need further discussion. The batteries evidently will not be used to any great extent as the engine will start on a turn of the crank on the magneto alone.

The Multiple Disc Clutch.

An all steel multiple disc clutch is neatly housed in the fly wheel, the discs running in oil, the rear of the clutch housing being open to the transmission case. This clutch has no connection whatever to the crank shaft is housed in an aluminum case supported directly from the engine base. Operation is selective by a swing lever of neat design as shown in the accompanying drawing, Fig. 7. When the upper portion is swung outward it picks up the low and reverse gear shift arms at the quadrant, thus doing away with the uncertainty of the gear shift pick-up arm as sometimes met with when this arm is located at the transmission some distance from the gear lever; when swung to

Nance Touring Car.

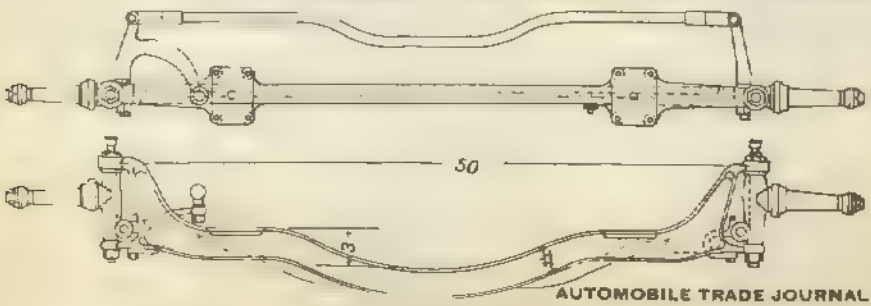
Fig. 4. This model uses the same chassis as the runabout, wheel base is 122 in., wheels 34, the fore door body is of the latest approved design, showing originality in its lines, is of aluminum and upholstered in hand buffed leather; dash is cowled and the mud guards and splash aprons are arranged to give maximum cleanliness to the occupants. The six cylinder motor is finished in grey enamel, and valve push rods and overhead rocker arms nickel plated, giving a neat and cleanly appearance under the hood. With complete equipment including top the price is $1900.

case and is of the self contained type, that it engages with a backward motion so that all thrusts while engaged are taken by the housing, ball thrusts being employed and no thrust whatever is transmitted to the engine shaft. This clutch is operated in the usual well-known manner by the left pedal.

Sliding Change Gear.

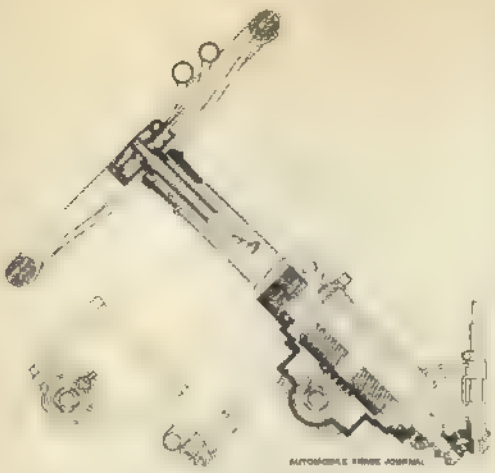
A very compact three speed and one reverse sliding change gear with the countershaft at the side of the main transmission the left or inward it engages the high or intermediate. The brake lever as shown is outside of the fore door yet in an accessible position, the front seats being low. The gears are of chrome nickel steel of wide face, and the direct drive ratio with 34 inch diameter wheels is 3.4 to 1.

The drive is by a shaft which under normal load is practically horizontal, producing the much desired straight line transmission of power. The forward end of the propeller shaft housing is joined to a substantial cen-



Front Axle of the Nance Six.

Fig. 5 This axle is a one piece drop forging of I-section, very much heavier than usually used in cars of such light weight as 2400 or 2500 pounds. The spring seats are forged integrally.



Nance Steering Gear.

Fig. 6. This steering gear consists of a double nut of chrome nickel steel, which allows of a take up for wear; the outside is cut to form a rack which in turn engages a spur sector operating the steering arm. The whole is enclosed in a substantial housing bolted directly to the side frame members and is packed with lubricant

tral cross frame member by a cast steel yoke which is not only pivoted to this cross frame member, but is also slidably attached Following correct design the axis on which this housing pivots is coincident with the axis of the single universal joint at the forward end of the propeller shaft, so that no undue strain is thrown on any of the parts due to the motion of the springs.

Full Floating Rear Axle.

The rear axle is of the full floating type, fitted with Hyatt roller bearings and New Departure ball thrust, two Hyatt roller bearings one at each end support the live shafts which drive the heavy artillery wheels by means of hub clutches, so that these members transmit torque only and are not called upon to carry any of the dead weight of the car. The driving shaft is mounted on a long Hyatt roller bearing and fitted with ball thrusts of New Departure construction. The differential is a substantial bevel gear construction housed in a neat case which forms the center of the rear axle housing, tubing forced in, pinned and brazed in position constituting the outer ends. This housing carries the Hyatt roller bearings upon which the rear wheels run. The axle is well trussed and a noticeable feature of the car is the fact that both of the axles are of much heavier weight than it is customary to use on machines of such total light weight. These two axles weigh 325 lbs., the front one being an Elliot type drop forging in one piece with integral spring seats; this member, although cranked at the center, gives full 10 inches road clearance.

Brakes.

The Nance car is liberally supplied in the matter of brakes, the internal and external rear wheel brakes, giving a total braking surface of 300 sq. in. These brakes operate on pressed steel drums bolted through the 1½ inch diameter spokes, there being no brakes of any kind on the transmission to throw extra stresses upon this member. The internal expanding brake consists of cast iron shoes operating against the steel drum, the external contracting brake is raybestos faced; the inside brake is operated by the foot lever being the service brake and is compensated, the eveners being fitted at each end with small turn buckles so that the single tree bar can be kept at right angles to the main brake pull bar which is also fitted with a turn buckle for adjustment. However, these adjustments are rarely necessary owing to the very large braking surface provided.

Springs.

The front springs are semi-elliptic, with seven leaves 1¾ inches in width, and 37½ inches from spring eye to spring eye. The rear springs are ¾ elliptic with scroll ends, the lower port having 8 leaves 48½ inches long and the upper 6 leaves 19½ inches long. All leaves are 2 inches wide and both front and rear springs are banded. The upper and lower flanges of the rear cross frame member extend beyond the frame forming a support for the spring which is slipped to and through these extensions. All spring eyes are fitted with grease cups at the end of the bolts and with an oil hide at the top so the grease can be softened up occasionally if desired.

Frame.

Heavy cold pressed channel section steel with all cross members and gusset plates hot riveted, form the substantial frame of the Nance Six. The side members at their forward ends are inswept or bottle necked to facilitate turning in restricted quarters. The rear of the frame is upswept over the rear axle thus providing a low center of gravity and yet room for ample spring vibration. In addition to the heavy gusset plates the frame is further stiffened by

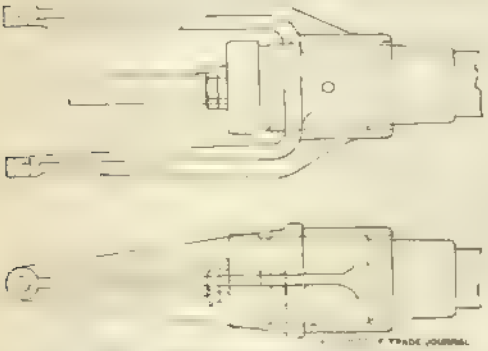
Gear Shift and Brake Lever.

Fig. 7. The gear shift lever as shown is of the swing type picking up at its base the gear shift arm, the various positions for high, intermediate and low being shown in the illustration. This lever is on the inside of the fore door while the brake lever is on the outside

carrying to the rear of the offset in the side frame members the widened top and bottom flanges of the frame sills.

Control.

The steering gear is of the sector and double nut type as shown in Fig. 6. These parts are of Chrome nickel steel strongly housed and supported directly to the frame



Yoke Support of Torsion Tube.

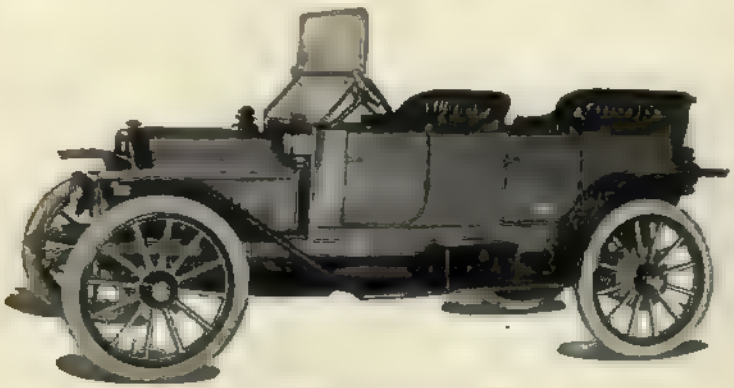
Fig. 3. The straight line drive shaft is a closed torsion tube, the forward end of which is slidably mounted in the yoke shown. This yoke surrounds the universal joint and is pivoted to a cross frame member so that its axis coincides with that of the universal joint.

side member. The double nut is adjustable to wear and has cut into its exterior surface a rack which engages a gear sector operating the steering arm. The steering column is 1¾ inches in diameter, topped by an 18 inch diameter hard rubber covered hand wheel with its internal rim notched for finger grip. The post is at an angle of 30 degrees and the spark and throttle levers are friction retained at its top, these members being absolutely silent in operation. An auxiliary or accelerator pedal is provided close to the foot brake pedal. It is claimed that this steering gear is absolutely irreversible and that no shock whatever can possibly reach the steering wheel. The tie link is protected by being placed at the rear of the front axle as shown in the front view of the car.

Bodies.

The Nance bodies are from the factory of a high grade body builder who has worked out very successfully the design submitted, as can be seen by a glance at the accompanying photographs. These bodies are of the fore door type providing the maxim of comfort for the occupants and at the same time show a symmetry of form which is very pleasing. The upholstering is of heavy hand buffed leather and ranks with that of any of the highest priced machines. The finish is also up to standard and is guaranteed to be first class in every respect. The metal bodies being of sheet metal on staunch hard wood frames are unusually light yet strong. The mud guards as shown are of the racy type with visored ends which prevent unnecessary splashing. Running boards are extremely short serving simply as a step and connection for the front and rear guards.

The small details which distinguish the high grade car such as attention at every possible point to methods of lubrication, the universal locking of adjustments and the use of tested materials give the Nance at once a prominent place in the automobile world.



New Moline Fore Door Model.

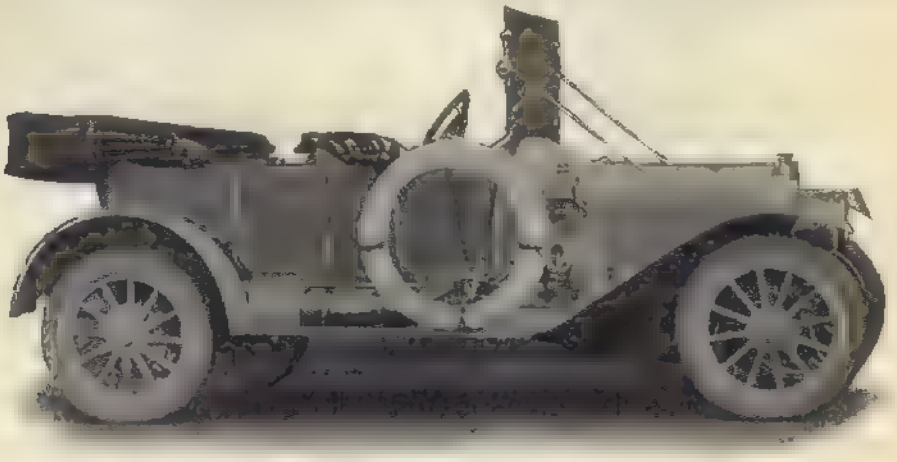
This new model differs from the other cars principally in the body. This is of the latest fore door design, making the 1911 Moline line complete. The motor is of long stroke type, 4 cylinders cast in pairs, 4x6 inches, rated 35 h. p. Ignition by two independent systems, using magneto. Wheel base, 112 inches, 36-inch diameter wheels, with 3½-inch tires. Cooling by thermo-syphon system.

The New York Shows always bring to light many new and interesting novelties—to get the right perspective of the whole, and the opinions of experts upon the new things, read our next number. A detailed review of the New York Shows, written by our staff of automobile experts, will make this a notable issue, and a forecast of the Chicago Show will add to the timeliness of the February JOURNAL. Order yours now!

Corbin Cars for 1911

By C. E. Morris

Three models comprise the line of the Corbin Motor Vehicle Corporation, of New Britain, Conn., U. S. A., for 1911, two of these three Corbins being new, the Model 40 Corbin, so called for the reason that it is fitted with a four cylinder, 40 h. p. water cooled motor, embodies a departure from previous Corbin practice, that is, this high powered Corbin is fitted with a T head motor. In previous Corbin cars, the L head motor has been used, in fact, it is used this season on the new Model 30 and the Model 18, which is the continuation of the 1910 four cylinder water cooled car. This Model 40 Corbin, which the makers claim is very capable in the way of power, speed and hill climbing efficiency, sells for $3000 complete, the Model 18 for $2750, and the Model 30 for $2000, this, of course, being the low priced car of the Corbin line. No radical changes have been made in the Model 18, as the makers assert that in 1910 it proved to be a very satisfactory car. On either of these three Corbins, various types of bodies will be fitted at the option of the purchaser, these all being of standard construction, each built according to the service for which it is intended



Corbin 40 Torpedo.

Fig. 1. Four cylinder 4¾ x 5½ motor, 120 inch wheel base, 56 inch tread equipped with demountable rims and quick detachable tires

The High Powered Corbin.

As the Model 40 high powered Corbin embodies a departure from the previous practice of the builders, it is the purpose of the writer to feature this vehicle. As above stated, it is fitted wih a 40 h. p. four cylinder T head motor, the water jackets, which are of large dimensions, being integral, stroke is 5½ inches, bore 4¾ inches. The cylinders are cast in pairs of the best grade of gray iron and they are carefully finished to ensure perfect compression. With the T head type of power unit there is, of course, opportunity for the use of large sized valves, which fact has not been lost sight of in this high powered Corbin. The cylinder sets are cast with open tops which are closed in with brass core plates retained to the cylinders by 5-16 steel studs and are anchored to the motor base by 12 9-16 steel studs, that is, 6 studs to each pair of cylinders.

The pistons are cast of the same material used for the cylinders, are flat topped and have four eccentric compression rings, diagonally lapped, and are ground on three sides. There is a broad oil groove about the piston pins and there are also four oil grooves at the bases of the pistons. The wrist pins are hollow hardened and ground steel members retained in the connecting rods by set screws, the pistons being bushed with bronze for the bearings. The connecting rods are drop forged steel, I-beam members, the big ends being split and held together with two steel bolts, castellated nuts and cotter pins.

The crank shaft is a 2-inch diameter chrome nickel steel member of the three bearing type, the bearings being plain and channeled for oil and are retained in the upper section of the crank case. The shaft is ground on the bearings and balanced. It is finished with an integral web to which the fly wheel is bolted, and, is offset one inch.

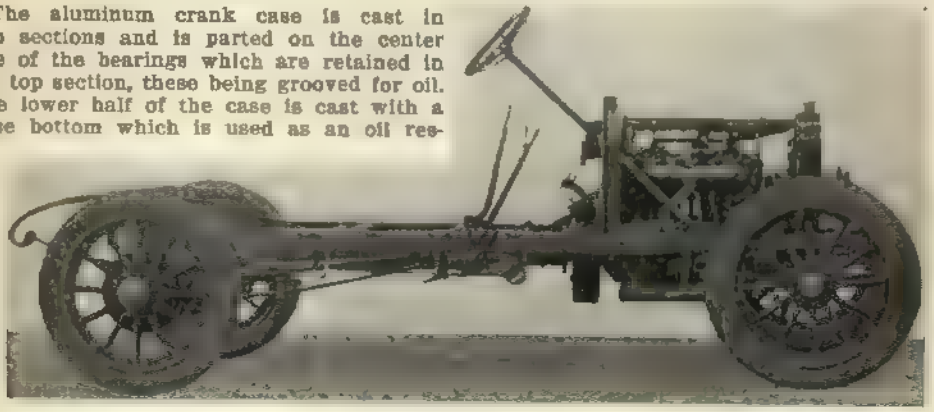
The two cam shafts are nickel steel, 15-16 diameter, the separate cams of hardened and ground steel being retained on the shafts by pins and keys.

The valves are interchangeable, 2½ inches in diameter, and placed in overhanging pockets, and as they are of liberal size there is no crowding of the fresh or spent gases. These valves are worked through vertical adjustable lift rods fitted with hardened and ground steel rollers retained in

bronze guides anchored to the motor base. The heads of the valves are nickel steel and the stems, carbon steel and the valve stems bear on cast iron guides forced into the cylinder castings. The valve springs are round section steel coils held in cup shaped steel washers.

Crank Case.

The aluminum crank case is cast in two sections and is parted on the center line of the bearings which are retained in the top section, these being grooved for oil. The lower half of the case is cast with a false bottom which is used as an oil reservoir. The motor is supported at four points, the four arms of webbed construction being cast integral with the upper case section, as is also the timing gear housing, a large cover being used to enclose the gears, rendering the motor gear compartment oil tight.



The 40 Chassis.

Fig. 2. Chassis of Corbin Model 40, 120 inch wheel base wheels 36x4, shaft driven, four cylinder water cooled motor, 4¾x5½, cylinders cast in pairs, two sets of ignition, pressed steel drop frame.

Lubrication.

At the lowest point of the oil pocket in the bottom section of the crank case is an oil pump driven from the exhaust cam shaft through gears, the lubricant being lifted from the drain at the bottom to a line and delivered through copper leads to the three main motor bearings, centrifugal force leading the oil to the connecting rods and the spray set up within the crank case provides for the cylinder walls and piston pins. A breather pipe which also serves as a filler, provided with a brass screen top, is placed in the left rear motor support, and a float feed device is placed amidships just forward of the left gear motor support.

Corbin 40 Motor.

Fig. 3. Right side of Model 40 Corbin four cylinder motor showing location of carburetor and magneto. The clutch has a bronze annular member used as a shifter and worked through a pedal. Clutch is aluminum, faced with leather.

Cooling.

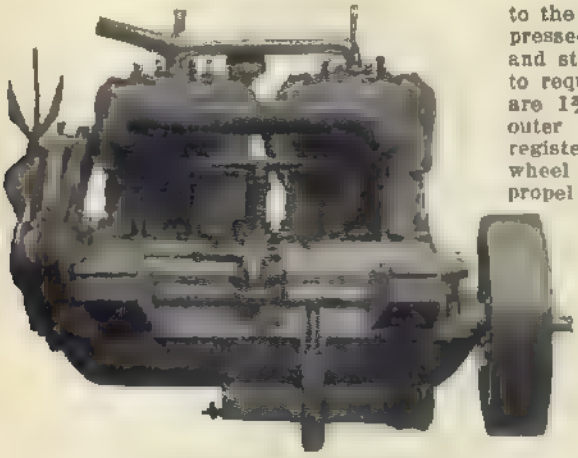
The motor of the Model 40 Corbin is water cooled, a distinctive type of honeycomb radiator being fitted, resting on a pressed steel saddle anchored to the frame side members and from this cooler the water is pumped to the water jackets, the water being delivered at the bases of the jackets where, after due circulation, it passes out through the brass dome head plates through the water lead to the radiator, these plates being removable provide for easy inspection of the jackets. The water pump, driven through a ⅝ inch steel shaft, fitted with a coupling, is located amidships on the left side of the motor. A six bladed grease cup, lubricated plain bearing fan, driven through a 1 inch flat belt, and an idler on the pump shaft line, is retained in an aluminum bracket, bolted to the motor base.

A float and jet carburetor is fitted to the Model 40 Corbin, being placed on the right side of the motor, the aluminum inlet manifold of a modified Y design being anchored to the motor by ⅝ inch steel studs, is 1⅞ inches inside diameter, while the exhaust on the left side of the motor is retained by ⅝ inch steel studs, is of 2⅜ inches inside diameter.

Ignition.

There are two sets of ignition on the Corbin high powered car, an imported magneto, secured to a base plate cast integral

with the upper section of the crank case, located on the right side of the crank case and driven from the motor gears through a steel coupling affords the primary source while a storage battery provides the auxiliary set, there being two sets of plugs, one in the screw plugs over the inlet valves



Left Side of Corbin Motor.

Fig. 4. Showing location of oil pump at base of oil pocket, sight gauge and belt driven fan. Note the heavy box like supporting arms.

and the other on the sides of the inlet valve pockets. The distributor of the battery system is located at the top of a vertical shaft driven from the inlet valve cam shaft, is placed just forward of the Number 2 cylinder. A single unit coil is mounted on the dash, both sets of ignition being controlled from a single switch. Ignition cables are carried in a fibre tube held in brackets integral with the water outlet on the heads of the cylinders.

Cone Clutch.

The clutch of the high powered Corbin is of the fly wheel cone type, in the cast iron fly wheel, which is bolted to the integral web of the crank shaft, the wheel being 18 inches in diameter and 4½ inch face, the aluminum cone, a six spoked affair, is 15¼ inches in diameter, faced with leather and the tension, instead of being maintained as in ordinary clutches of this type, by a single spring, is provided by three small springs which may be adjusted

Three Speed Sliding Gear Transmission.

The transmission of the Corbin 40 is a three speed sliding gear assembly selectively controlled, all bearings being of the F & S. annular ball type The case is cast in two sections, with all shafts and gears mounted in the lower half the shifting levers only being placed in the upper part. Shafts and gears are of chrome vanadium steel, shafts being 1 inch square and gears have a face of ⅞ inches. Support is at three points, the case being anchored at the rear to a drop cross member of the frame. Drive to the full floating rear axle is through a chrome nickel steel propeller shaft 1¼ inches in diameter, this being fitted with two universal joints.

Full Floating Rear Axle.

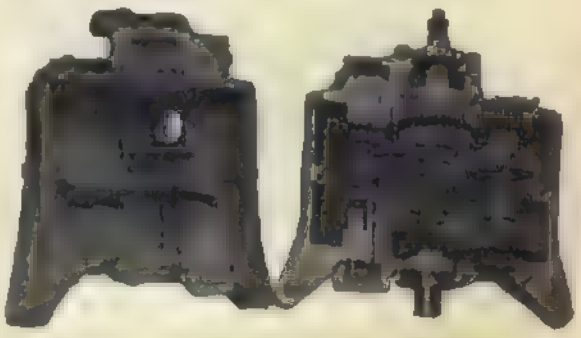
A full floating type of rear axle is fitted to the Corbin 40, the axle housing being of pressed steel of rather symmetrical design and staunch construction, which is such as to require no truss rod. The driving axles are 1⅜ inches in diameter, fitted on the outer ends with six jaw couplings which register, or engage in notches cut in the wheel hubs, so that these drivers simply propel the car, the load being borne by the axle tubes. The wheels are supported in F & S annular ball bearings. The front and rear of the differential housing has removable cover plates, the differential assembly and the driving pinion with the bevel gear being mounted on this front cover plate. The mesh of the pinion and bevel is adjustable. A triangular torsion tube is fitted which at the forward end is provided with a ball joint retained in a spring buffer, the member being anchored to the differential case at the rear

Front Axle.

The conventional drop forged I section front axle is fitted to this high powered Corbin, this being center dropped and formed in one continuous piece with integral spring seats and steering jaws. The front wheels, like the rear, are mounted in F & S annular ball bearings, there being two of these to each wheel. Thrust bearings are placed at the tops of the steering jaws.

Frame.

A conventional drop frame is used on the Model 40 Corbin, there being a drop of four inches over the rear axle, the side members also being inswept forward or the dash providing for a short turning radius as well as an harmonious appearance. A



Transmission of Corbin Model 40.

Fig 5. Gears ⅞ face, shafts 1 inch square mounted on F & S annular ball bearings support at three points. Attention is called to the closed in gear shifting rods and substantial construction of all parts.

one inch steel bar extends from one forward end of the frame side member to the other, which necessarily braces the frame at this point. The frame is assembled in jigs and hot riveted and is built of 3-16 inch stock, being strongly cross and corner braced. At the narrowest point it is 28½ inches wide, at the broadest 33 inches, and the channels at the deepest point are four inches, at the widest point the flanges are 3¾ inches and the narrowest 2¾ inches. The motor is supported at four points, the transmission at three.

Demountable rims are used as standard equipment, fitted with quick detachable tires, 36x4.

Springs.

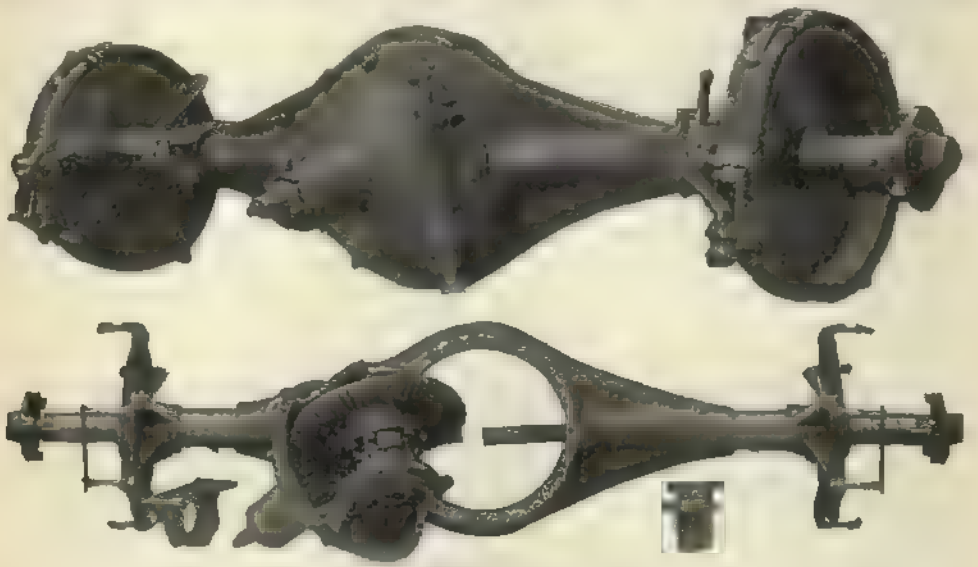
The front springs are semi-elliptic, 2 inches wide, six leaves, 32 inches long, anchored to the frame ends forward and to the frame side members at the rear and to the integral spring seats of the front axle through steel spring clips. The rear springs are three quarter-elliptic in design, the bottom sets being anchored to the swiveling spring seats on the rear axle tubes in brackets riveted to the frame forward and the eyes of the top quarter members at the rear. Leaves are 2¼ inches wide, there being 8 leaves to the bottom sets anchored 36 inches from center to the rear, 24 inches from center forward, thus they are perched off center. The top sections are of the same width as the lower, but have seven leaves, the forward ends of which are held between the top and bottom plates of the rear cross member of the frame, projecting outward from the frame, through steel spring clips. All spring eyes are bushed with bronze. Grease cups are placed at the spring eyes so that the owner of a Corbin need never have a dry spring.

Brakes.

As for brakes, there are two independent sets, the service brake foot operated, being 15 inches in diameter, 2¼ inches wide, the emergency brake, hand operated, 13½ inches in diameter and of the same face, this an internal expanding shoe type, the former an external contracting band type. Both members act on the pressed steel drums secured to the rear wheels and braking is equalized, tension being through steel pull bars carried within the frame. A one-inch cross bar is fitted aft of the third cross member of the frame, the final action being through drop forged steel levers and hardened steel cams.

Steering Gear.

The steering gear is of the worm and sector order, the sector which is forged integral with the sector shaft being a full gear, thus allowing for take up for wear, and affording about four times as much face, for this reason, as the ordinary sector. The case is fitted top and bottom with ball thrust bearings and the gear and sector are of chrome nickel steel, specially treated. The steering post is given a convenient rake, and is provided with an 18-inch steering wheel. Connections are tubular steel, fitted with ball and socket joints, the cross connection and drag link being ⅞ diameter, others of the assembly being of one inch diameter. The cross connection is carried aft of the front axle and is drop centered to conform to the drop of the axle. The steering arm is drop forged steel.

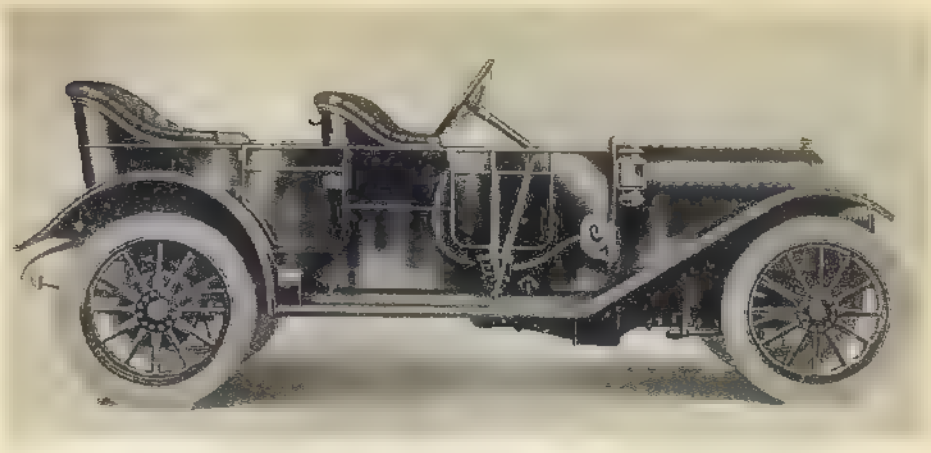


Rear Axle.

Fig. 6. Pressed steel housing full floating type, differential driving pinion and bevel gear mounted in front plate of case in brackets, also assembly of differential and driving elements.

Control.

The spark and throttle are controlled from the hand levers on the steering wheel quadrant and a foot accelerator is also fitted and the combination magneto and bat-



Model 30 Torpedo.

Fig. 7. Corbin Model 30 torpedo model control levers are mounted outside the forward panel within easy reach of the operator. Note the ample protection to passengers afforded by the body and guards

tery switch on the coil box controls the two systems of ignition. The clutch and service brake are worked by adjustable semi-stirrup plate, foot levers and gears are shifted by the hand side lever, the emergency brake being brought into action by a hand side lever. On the fore door models these control levers are carried outside the right fore door panel.

Bodies.

Various types of bodies are to be had with the Corbin 40, the touring car, demi tonneau or runabout types being $3000, complete, equipment including the imported magneto, combination oil and electric lights at the side and rear, two gas headlights, top, rain vision wind shield, Warner Model K speedometer, Prest-O-Lite gas tank, full set of tools, Firestone demountable rims, tire irons and the like. The Corbin torpedo body, as applied to the Model 40, is $3100, while the limousine with all appointments is $4000. The enclosed vehicle is fitted with 37 inch wheels and 4½ inch tires.

The Corbin Model 30, $2000.

In the Model 30 Corbin the L type motor is employed, the cylinders being single cast necessitating the use of a five bearing crank shaft. This same construction prevails in the Model 18 this season as last. This vehicle, with a wheel base of 115 inches, fitted with 34 inch tires, is $2000, has a three speed transmission of the selective type similar to that of the Model 18, and a semi floating type rear axle.

Motor.

The Corbin 30, L type motor cast singly is of 4½ bore and 4¼ stroke, both inlet and exhaust being on the left side of the

Corbin Motor Partly Dismantled.

Fig. 8. Side view of Model 30 Corbin with cam lifter housings removed. Note manner of anchoring the cam shafts and the large diameter wide faced gears.

unit. The cylinders being cast separately, a five bearing rigid crank shaft of chrome nickel steel, 1½ inches in diameter, is used. The three intermediate bearings are plain die cast metal, the front and rear bearings being annular ball. Valves worked from the single ⅞ cam shaft, cams being separate, hardened steel ground and pinned and keyed. Action is imparted to the valves through drop forged steel levers, the bearing points being ground, instead of by the ordinary roller or mushroom lifts.

The crank case of the Corbin 30 is cast in two sections, the motor bearings are retained in the lower section the upper and lower halves of the case being held together by through steel bolts. Two large hand hole covers on the right side of the motor permit of inspections of the case. The pistons are of cast gray iron, there being four compression rings above the piston pins, two wide oil grooves below, while the connecting rods of drop forged steel are hinged at the big ends, shims being used for adjustments.

Lubrication is by force feed and splash, the oil tank being placed under the floor boards with four leads to the cylinders, the overflow from the main bearings being utilized for the splash system. Sufficient oil is stored in the crank case for 100 miles of service.

Cooling.

Cooling is by water, the same type of honeycomb radiator as fitted to the Model 40 being used. The pump is driven through a spring device designed to snap in cold weather should the pump for any reason become frozen.

Ignition.

Two sets of ignition on the Corbin 30 give the operator the choice of magneto or dry battery. An imported magneto is used, this being placed on the left side of the motor forward of the balance wheel and driven through a gear from the cam shaft, the magneto plugs being placed over the exhaust valves, the battery plugs over the inlets. A distributor for the battery system is driven from the cam shaft through a vertical pillar and a single unit coil is mounted on the dash.

Clutch and Transmission.

A fly wheel cone clutch is used, this being 15 inches in diameter with a face of four inches, tension being provided by three coil springs as in the Model 40. Its facing is of leather and four small springs are inserted under the leather to soften the engagement.

A three speed transmission is used, direct drive being on the third speed.

The case, cast in two sections of aluminum, with the gears and shafts in the lower section, is bolted to an extension of the motor crank case, which forms an underpan, thus there is derived a unit system power plant. All transmission gears are of high grade alloy steel, so are the shafts and the bearings are annular ball. A triangular torsion tube is used somewhat similar to that on the Model 18, this having a forward ball joint anchored in a spring buffer.

Bottom Section of Unit Assembly.

Fig. 8 Corbin 30 transmission fitted with annular ball bearings, lower section of case has an extension which is bolted to a projection of the lower section of the crank c thus affording a unit system power plant, both upper and lower case sections of crank case held in place by through bolts

Rear Axle.

The rear axle is of the semi-floating type, annular ball bearings being used. From the transmission to the rear axle is the usual type of cardan shaft fitted with two universal joints. The rear wheels are secured to the squared ends of the driving shafts, which are of chrome nickel steel, and are mounted on annular ball bearings.

The front axle is of the same construction employed on the Model 40 and the steering gear is likewise the same, the worm and the full gear sector being of alloy steel.

Springs.

The spring equipment on the Model 30 is much the same as on the Model 40, the forward sets anchored in the usual way, being 31½ inches long five leaves, 2½ inches wide, while the rear springs are of the same design and of the same size as used on the high powered car. Wheels are wood, artillery type, 34 inches in diameter, fitted with 4 inch tires front and rear.

Brakes.

The two sets of brakes, fully equalized act on the pressed steel rear wheel drums, the service brake being the external contracting member, the emergency the internal expanding set. Leverage is through steel pull bars, forged steel levers and hardened steel cams.

Frame.

The frame of the Model 30 is of pressed steel of deep channel section, the member being dropped from the rear axle and narrowed forward, it is hot riveted throughout and is braced by cross and corner pieces. The motor is secured to flat steel plates which extend from the frame side members and which also have a tendency to stiffen the frame at this point.

The wheel base on all cars of the Model 30 is 115 inches tread standard or, 56 inches. The price of the Model 30, equipped with magneto, tire irons, Prest-O-Lite gas tank, oil side and tail lights is $2,000 in touring cars, five passenger capacity demi-tonneau or roadster type.

The Model 18.

This car is the continuation of the single model marketed with several types of bodies in 1910, and is fitted with a four cylinder L head motor of the same dimensions as the Model 30, the car being shaft-driven, having a three speed transmission and a semi-floating rear axle. The wheel base is 120 inches and fitted with a fore door five passenger touring body. The price is $2,750, which is the same price set for the demi-tonneau and roadster. Wheels are 34 inches in diameter, fitted with four inch tires. Lubrication is by force feed splash and ignition is double, primary source magneto, secondary dry battery, distributor and single unit coil mounted on the dash. There are two complete sets of plugs. The springs are semi-elliptic forward and three-quarter elliptic rear and the steering gear is of the same general design employed in all Corbin cars for 1911.

The equipment includes magneto, top, gas head lights, oil tail and side lights, gas tank and full set of tools

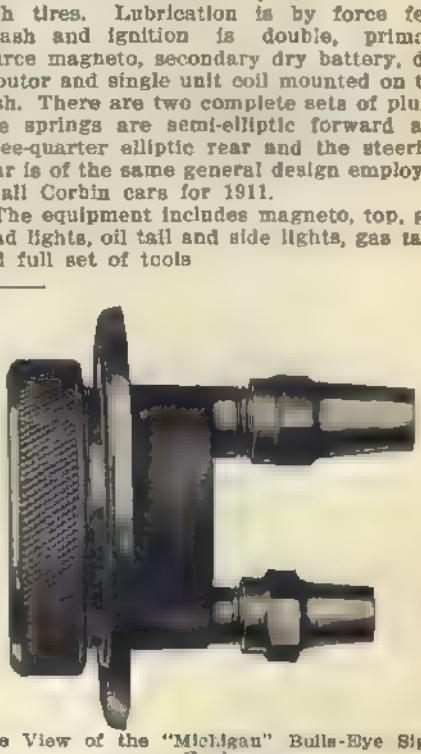
Corbin Crank Shaft.

Fig. 10. Five bearing crank shaft webs and pins drilled for centrifugal force oiling, intermediate bearings are plain die cast metal, ends annular ball bearings.

MICHIGAN AUTOMOBILE PARTS

The Michigan Lubricator Company, Detroit, Mich., manufactures a comprehensive line of automobile parts including air cocks, priming cups, automobile fittings, tank fittings and dash sight feeds.

The "Michigan" Bulls-Eye Dash Sight Feed.



Side View of the "Michigan" Bulls-Eye Sight Feed.

Four styles are catalogued of the last named article, the Bull's-Eye pattern being illustrated herewith. This sight feed for use in connection with the constant level splash system of automobile lubrication is of latest design. It is set into the dash and is flush with it, but the background of white enamel shows the flow of oil very clearly.

The 1911 Hudson

The Hudson car for 1911 is an entire departure from the 1910 model. The 1911 line will consist of the Hudson "33" Touring Car, Pony Tonneau and Torpedo, together with a continuance of the $1000 Roadster, showing many refinements over the popular 1910 models. The five-passenger touring car will sell for $1250, the equipment including two gas lamps and generator, two side lamps and tail lamps. The four-passenger Pony Tonneau will sell for $1300, and five-passenger Torpedo for $1350.

Power Plant.

The motor has many original features. It is 4 inch bore and 4½ inch stroke, and will turn up 2500 revolutions per minute under load. The cylinders are cast en bloc, the same as in 1910, but the exhaust and intake manifolds are carried on opposite sides. This is accomplished by taking the gases from the carburetor, past easy bends, through the casting between the cylinders, into the intake valve ports on the opposite side.

No fan is used in this power plant, except the fan flywheel spokes, the flywheel being a large diameter steel casting, this encased fan gives sufficient draft through the radiator to accomplish the desired results. A sheet steel dust pan, bonnet and flywheel cover serve to make the motor compartment sufficiently air tight for practical purposes, so that all the air drawn by the flywheel flows through the radiator. This furnishes an ample cooling medium for the hardest kind of service. The top of the cylinder block water jacket has been entirely cut away and a large cap piece fitted over same, tapering to a good sized neck at the forward end, over which is slipped the hose which comes from the radiator. The large opening thus exposed assures the thorough removal of sand, etc., when the casting is made, which in many motors is the cause of much over-heating. There are but two hose connections, both of which are extremely short, and it will be noted that the pump is so designed and carried on the motor that the hose connection required to connect it with the radiator is not over three inches long. The connection to the top of the radiator is not over 6 inches long. The same type of radiator is used for 1911 as least year, except that it is made two tubes deeper, thus having more cooling surface and more capacity.

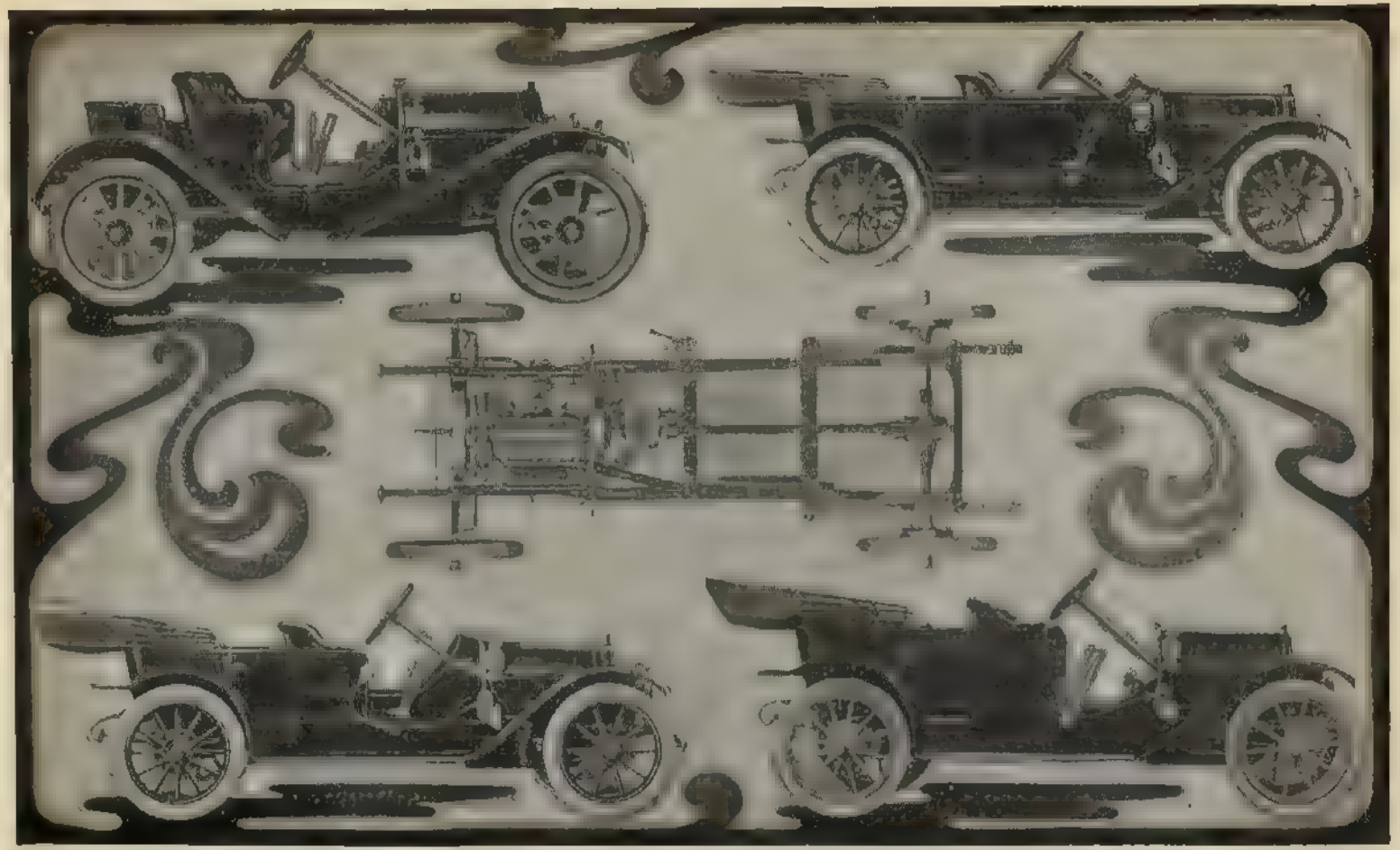
The cam shaft is driven from the train of gears in front, which in this motor are of the spiral type. There are only two gears in the front gear case, one of which is on the cam shaft. On top of the cam shaft gear and in a separate housing, is the transverse spiral gear on the magneto and pump shaft, driving the same, the magneto and pump shaft being set across the front of the engine directly to the rear of the radiator, as shown. This makes the back end of the magneto absolutely accessible and in full view when the right side of the bonnet is raised. This magneto is carried on a bracket, bolted to the right front leg of the motor. On the other end of this shaft is driven the circulation water pump which is carried on a bracket borne by a casting on the left front motor leg. The pump is exposed to view by raising the left side of the bonnet, and is so extremely accessible that every part can be taken off with the greatest facility.

Side and End View of Hudson Motor.

Fig 1 This little motor has 4 by 4½ inch cylinders, cast en bloc, a peculiar feature of construction being the complete housing of every moving part including the valve lifting rod mechanism. The end view shows the transfer shaft which drives the magneto and water pump

Moving Motor Parts Protected.

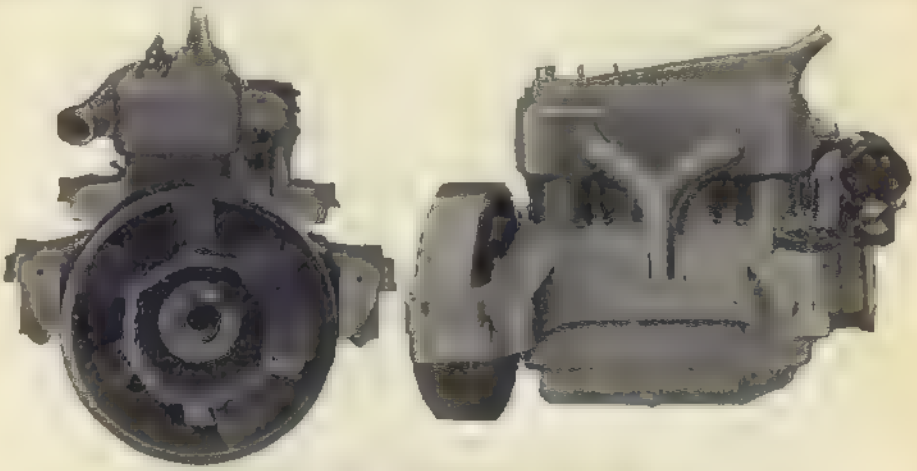
On the left side of the motor will be noticed two plates covering the valves and their springs, push rods, etc. This not only protects the mechanism from dust and dirt, but deadens the slight noise caused by the push rods. Upon the removal of the plates the crank shaft and the other on the cam



Group of 1911 Hudson Models.

The above group of the new Hudson models gives a good idea of the type of bodies for 1911. The roadster in the upper left hand corner is a continuance from the 1910 line, but shows many refinements over the previous year. It sells for $1,000. The five passenger touring car for $1,250, is seen at the lower left and opposite it the $1,300 Pony Tonneau. Above to the right is the five-passenger Torpedo for $1,350. In the plan view of the chassis attention is called to the method of supporting the transmission case, which is bolted direct to the rear legs of the motor by four heavy bolts. The brake and clutch pedal and clutch throw out yoke mechanisms are carried by these legs, making virtually a unit power plant.

the valves are just as accessible as though the plates were not used at all. The special valve lifting tool reminds one of a pair of scissors. It has been shown that heavy wear takes place on the push rods and valve stem guides through foreign matter settling on their oily surfaces and working like emery into the guides. An immense amount of dust is, of course, drawn through the radiator, and an effort has been made to produce a dust-proof power plant and at the same time provide a clean and sightly motor. One of the most striking features of the power plant is the entire absence of mechanical bric-a-brac, such as rocker arms, valve cages, push rods, and many little things which are in sight on the average motor. This motor presents the appearance of a solid cast block, with nothing moving but the fly wheel. The exhaust manifold is made detachable, so that short pipes for racing purposes may be quickly bolted on to project through the side of the bonnet. It will also be noticed that the exhaust is on the left side—a great advantage in racing



Inlet Side and Rear of Hudson Motor.

Fig 2. In the side view is shown the simple Y inlet manifold and the casting at the top for the outlet of the water jackets, also the bracket which supports the magneto, the fly wheel as shown constitutes the fan and is the only moving part visible from the outside of the engine. It is claimed this motor will turn up to 2,500 r. p. m.

No sub-frame is used in the 1911 Hudson, the motor legs on the contrary, being bolted directly to the frame, resting on supports which project out slightly from mid-section Six heavy bolts hold the motor in place—one on each forward leg, and two on each after leg. The section of the legs shows that they have gone to the extreme in an effort to secure strength, as the legs are exceedingly large and of box section.

The two-bearing crank shaft is retained only it has been increased in size to allow for the increase in power of the motor. The front bearing shows a diameter of 2⅛ inches and a length of 3½ inches. The rear bearing is of exceptional diameter, showing 2¼ inches and 4 inches, so that the load per square inch on the bearing surfaces on crank shaft, cam shaft and connecting rods, is far below the average in motor car design. The rear end of the crank shaft has been bored out to accommodate the clutch spring, which will be mentioned later. The cam shaft is 1 7-16 inches in diameter, and is supported by two plain bearings, as is the crank shaft. Utilizing this large diameter, cams of large section have been obtained, allowing an exceedingly easy throw of the push rods, and thus obtaining a desirable lift without noise. The crank case which surrounds the crank and cam shaft is of barrel section—the strongest possible construction. The two end doors are set in to carry the crank shaft bearings, and are used for the removal of same. The crank case on the 1911 Hudson motor is not split as most cases are, hence the doors in the end. The exceedingly heavy crank case and legs, together with solid bolting to the end block cylinder castings, should guarantee perfect alignment of bearings at all times. The 2¼ inch and 4 inch rear bearings on the crank shaft are especially desirable owing to the gyroscopic action of the fly-wheel in turning corners. The valve tappets have renewable bushings, and the system of enclosing the valve mechanism with plates, insures, as actual practice has shown, a thorough oil lubrication, not only of the valve tappet mechanism but of the stems and guides as well.

Lubrication.

Lubrication is accomplished through a horizontal force-feed pump, operated by an eccentric cam on the cam shaft, and owing to the extreme size this eccentric cam is given a very easy swing, thus eliminating noise. The discharge from this pump leads directly to the timing gears in front, which are thus kept thoroughly saturated with oil. The oil drains from the gear case back into

the crank case, thus filling the various compartments to the proper level and over-flowing at the back into the reservior bolted to the bottom of the crank case. This pump also operates a sight feed on the dash and draws from a large strainer located near the bottom of the reservoir and extending its full width, so that danger of the strainer becoming plugged is practically eliminated. The oil level is determined by means of a try-cock located on the right side of the oil reservoir, the cock being accessible through a rod and handle extending up alongside of the right front leg. The gears in the front gear case are so cut as to throw the oil to the back of the case, thus preventing entirely any leakage through the hole into which the crank is inserted.

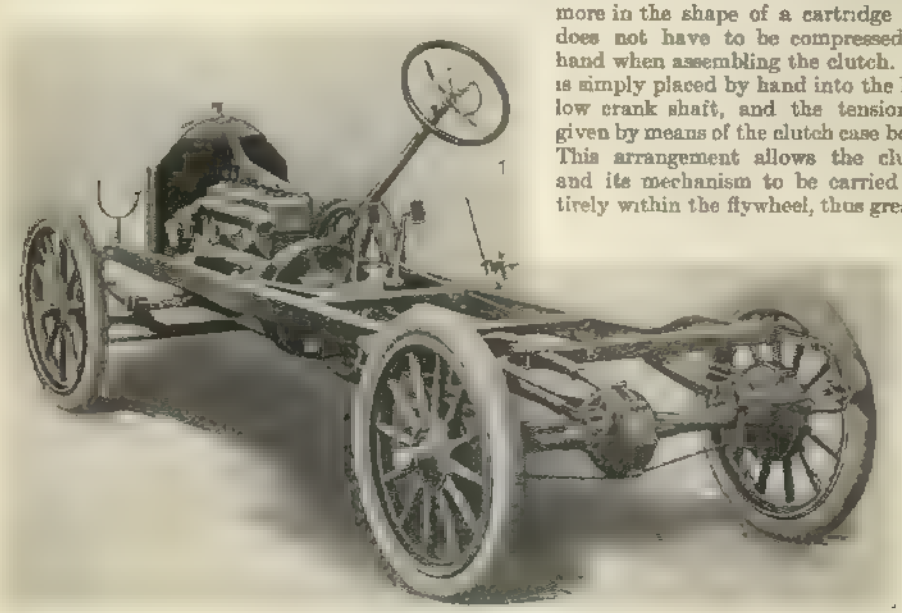
Supported by the two left legs and bolted to them, is hung a sheet steel tool box containing the tools most necessary for repairs. This tool box is instantly accessible on raising the left-hand side of bonnet. A noticeable feature is the fact that the motor may be easily cleaned, as there are remarkably few projecting parts and corners to interfere with wiping the machinery. The castings and appurtenances are joined with easy curves, making the wiping of the motor a simple matter.

Ignition.

The ignition system consists of new Bosch Duplex Magneto and coil. This system uses a non-vibrating single coil which has the appearance of a simple switch on the dashboard. The distributor is in the magneto itself. The batteries are simply used for starting and are switched on together with the magneto. After the motor is started the batteries are switched off, leaving the magneto in operation alone. This is the most modern Bosch system.

Clutch.

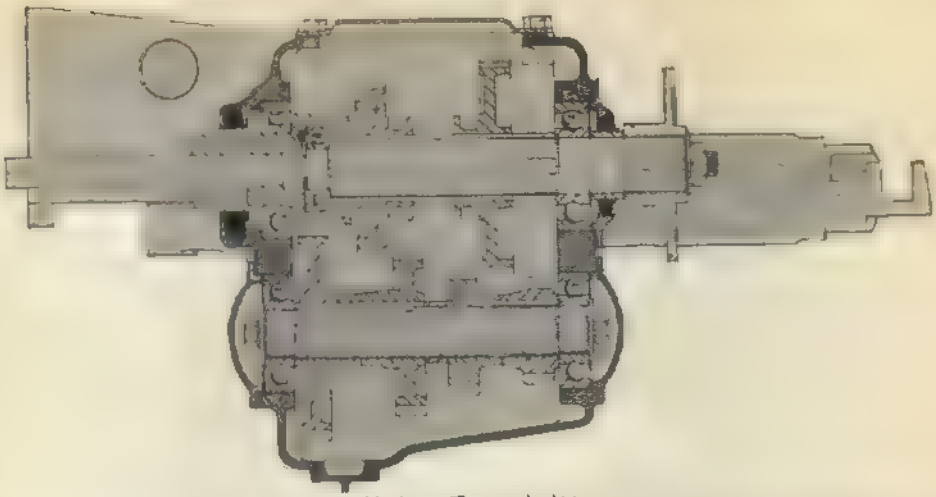
The Hudson Company, like many others, has abandoned the cone clutch and has here inserted the clutch spring. Inside of the rear end of the crank shaft is inserted the clutch spring, which is controlled so that it cannot expand more than about three-eighths of an inch. This control is established by two cups with a bolt extending through them, so that the spring, when removed, is more in the shape of a cartridge and does not have to be compressed by hand when assembling the clutch. It is simply placed by hand into the hollow crank shaft, and the tension is given by means of the clutch case bolts. This arrangement allows the clutch and its mechanism to be carried entirely within the flywheel, thus greatly economizing space. The clutch case fits very closely about the clutch discs in order that the maximum space may be afforded for the blades of the flywheel fan. The centrifugal influence tends to keep the oil in the case out among the discs, with the result that they receive proper lubrication. A plug is inserted in the flywheel which, when in a vertical position, is used for filling with oil, and when turned over at the bottom may be used for draining the case.



Three-Quarter Rear View of Hudson Chassis.

Fig 3. This illustration shows the general chassis layout, the wel. braced frame upswept at the rear, the long ¾ scroll end rear springs and the control levers and pedals.

The entire clutch, with its flywheel, bearings and its ball thrust bearings, may be removed from the case by simply removing the nuts of the through bolts, which carry the outer clutch discs, and four cap screws which hold the clutch cover in place, the transmission, of course, having been previously removed. All discs may be removed from the clutch hub without in any way disturbing the clutch hub and shaft assembly. The clutch spring will then be found lying within the hollow rear end of



Hudson Transmission.

Fig. 4. This change speed gear gives three speeds forward, one reverse, selectively operated. The transmission case is not supported by the frame, but to the rear of the engine crank case, thus virtually making a unit power plant, preserving alignment of the shafts.

the crank shaft as shown in the illustration.

Transmission.

The transmission has three speeds forward and one reverse selective type. Another departure from American practice is here found, but at the same time it is the practice of the Fiat, Lancia, Imperia and others abroad. The transmission case is not supported by the frame in any manner, but is bolted direct to the rear legs of the motor by four heavy bolts. The transmission legs carry the brake and clutch pedal mechanism, and the clutch throw-out yoke mechanism, so that none of these control mechanisms are carried on the frame. It is virtually a unit power plant, and perfect alignment of crank shaft, clutch and transmission shaft is attained. It will be noted that this eliminates the universal joint between the clutch and the transmission.

Hudson Multiple Disc Clutch.

Fig. 5. The Hudson multiple disc clutch is a very compact construction carried entirely inside of the fly wheel hub, the clutch spring being enclosed in the hollow rear end of the crank shaft. A ball thrust bearing is provided as shown.

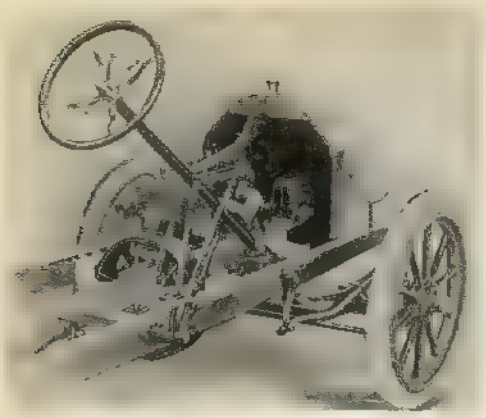
On the rear end of the transmission is bolted a small cast-iron housing which contains all the position finders, and the rods for the operation of the gears, so that they are instantly accessible. Allowance has been made for any possible variation of position due to springing of the frame, so that no difficulty is encountered in engaging for gear shifting, in spite of the fact that the engaging finger is supported by the frame and the shifted rods supported by the motor.

Transmission shafts are supported by heavy roller bearings which admit of the use of heavier lubricant than with plain bearings such as the Hudson used last year. A grease-cup is located on the clutch throw-out yoke.

Everything in the transmission is extremely accessible through an inspection plate at the top, which is of large dimensions. The shafts are located one above the other, and may be easily removed by first taking off the doors at front and back, when the bearing on one end may be pushed through the door, the other end of the shaft lifted and taken out through the top. A large drain plug is inserted in the bottom of the case for cleaning purposes.

Rear Axle.

Driving through a Spicer joint to the rear of the transmission, the Hudson Company uses a long torsion tube and propeller shaft reaching to the rear axle. The front end of the propeller shaft is supported by a roller bearing, and the rear end by a new departure ball bearing, to take the thrust of the driving pinion.



Forward End of Hudson Chassis.

Fig. 6. This view shows the control levers and the method of supporting the transmission by bolting to massive arms extending around the fly wheel, the power plant thus becoming a unit construction. It also shows the steering connections in their protected positions above and to the rear of the front axle

The inner ends of the two drive shafts are supported by Hyatt roller bearings of nickel-steel construction, and in fact practically all the moving parts of the 1911 rear axle are nickel-steel. The rear wheels are carried on Hyatt roller bearings on the axle tube, and the drive shaft simply turns the wheel and does not support any weight. The system is the full-floating type. It will be noted that only one universal joint is used in the car and that directly at the head of the propeller shaft behind the transmission. Theoretically, if two universal joints are to be used, the driving and the driven shafts should be parallel, but contrary to this, most manufacturers using two universal joints construct the propeller shaft and pinion shaft in line, with the universal joint between, thus really making its use unnecessary, and many concerns are now abandoning it altogether, especially in Europe.

Large sized brake drums with improved leverage arrangement make the operation of the brakes easy and efficient. The brakes are used externally for the service brake and internally for emergency brakes on the rear wheels. The brakes are lined with fibre and are adjustable for wear. The front and rear wheels are 34 inches x 3½ inches on all 1911 models. The sectional cut shown gives an excellent illustration of the detail of the wheel and brake construction.

Frame.

The Hudson Company claims this is the strongest frame to be seen on any car of equal weight. The mid-section is a channel of 3¼ inches, top and bottom and 4 inch depth, tapering to both ends. Four heavy cross members are used, one in front for the rigid support of the radiator, one at the point where the operating levers are attached, and a third at the point of anchorage of the rear springs, and the fourth at the rear. It will be noticed that this fourth cross member projects beyond the side members and embraces the upper quarter of the three-fourths elliptic rear spring, thus eliminating entirely the bracket generally riveted on at this place. All the cross rods for the operation of brakes and transmission are concealed by their being placed within the channel cross member.

The entire chassis has an unusual number of drop forgings, among the most noticeable of which is to be found the peculiar spring shackles. These are forged with a cross bar, so that they maintain their alignment and are absolutely prevented from turning over—a cause of much annoyance to the average driver. Case hardened bolts are used in these shackles, and there are grease cups on them all.

Springs.

The springs are held to the spring pads on both axles by means of a heavy curved drop-forging, which is bent down by two exceedingly large nickel-steel spring clips, thus bringing great pressure to bear on the center of the springs. This system of heavy spring clips and drop-forge center piece has been proven to almost entirely eliminate the spring breakage, as the spring is held firmly enough to prevent bending in the center. The springs are of unusual length, to insure easy riding.

Front Axle.

The front axle is an I-beam drop-forging of 2¼ inch depth of section. The flanges are greatly widened at the spring seats to withstand road shocks, and are tapered from the full width of the spring seat to the steering knuckle, and from the inside of the spring seat to the center of the axle,

Hudson Brake and Rear Wheel.

Fig. 7. This view shows the rear wheel bearing and the brake drum with its internal and external brakes. A special leverage arrangement makes the brakes easy of operation.

thus displaying an unusual depth of flange where the principal road shocks occur. Ball bearings are used for the front wheels.

Steering Gear.

The new steering gear of the Hudson design is entirely free from all bevel gears and small delicate parts in the operating mechanism. Ball thrusts are provided as well as adjustment in all directions. The gear is made a full gear, so that it may be turned in four different positions, presenting in each position an entirely new bearing surface, and the same may be said of the worm, thus practically furnishing a new steering gear four times during the life of this part of the car. All steering connections are protected with leather boots, which is unusual in a car of this price, and the size of all tubular steering connections is ample for the most severe service. Springs have been placed in both the front and rear ends of the fore-and-aft rod in order that the road shocks may be cushioned with the least possible inertia resistance in the weight of the part.

Wheels.

A full, round section spoke is used instead of the usual style spokes which are of thin section forward and rear. The front hub flanges have ten bolts and the rear five, designers claiming that in contest work and rough usage the front wheels are the ones receiving the most severe road shocks, and it is generally the front wheel which gives way at the critical moment. Lock washers are placed under every nut.

Thorough dust-proofing of the running board has been attained by the insertion of full length sheet metal plates joining to running board, frame and fender apron.

The Hudson Company claims that the little things which so annoy the tourist have been eliminated on this car, or so arranged that the very minimum of annoyance will be encountered

The W. F. S. Motor Cars

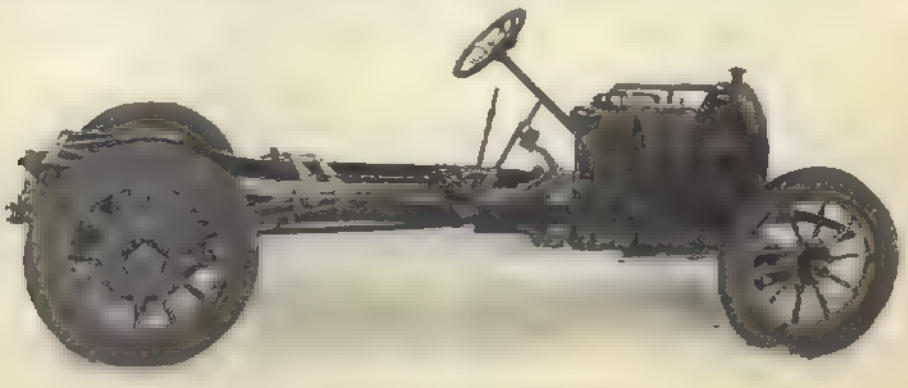
A late addition to the automobile industry is the W. F. S. Motor Car Co., 4224 Ludlow street, Philadelphia., Pa., manufacturers of the W. F. S. cars. The models and prices are as follows:

The five passenger touring car, with fore-door, oil lamps only, $2,250. Runabout, with rumble seat, $2,150. Torpedo type runabout, with beetle back and folding rumble seat, $2,200. Four passenger gunboat tourabout, $2,300. Five passenger limousine, $3,200. All these models are based on a single chassis.

The Engine.

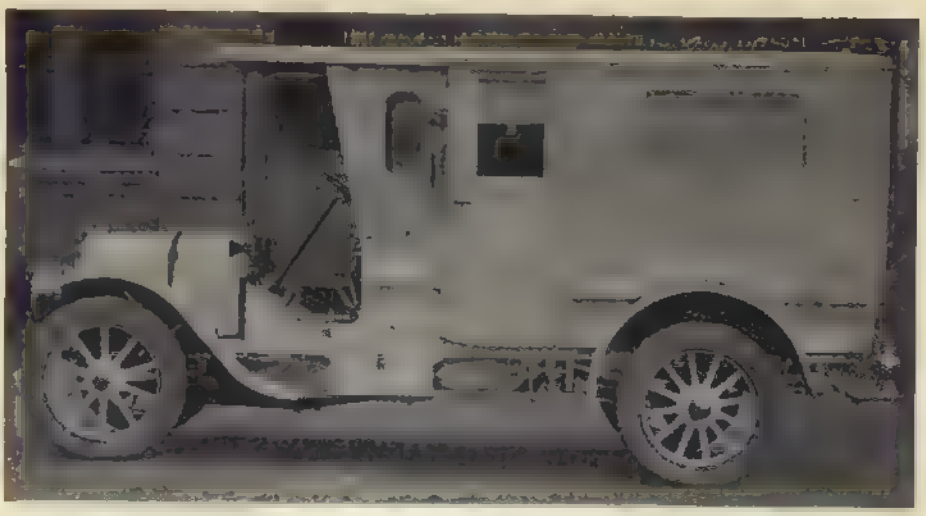
The motor has four cylinders, cast in pairs 4⅛ in. bore and 5¼ in. stroke. Valves on one side actuated by a single cam shaft The cylinders and pistons are ground to within one-quarter thousandth of an inch. A self-contained oiling system with an oil pump forcing oil through hollow crank shaft is used. The crank shaft is of 40 carbon H. T. Steel. All bearings are Parsons white brass and the cam shaft is cut from a solid piece of high carbon steel.

The timing gears are laminated fibre and bronze, helical cut, and all timing gears are accessible from the front without dismantling anything but the radiator. The valve tappets are of the mushroom type, hardened and ground. The starting crank self-contained with the engine, the fly wheel is balanced on knife edges so as to run with as little vibration as possible. The engine is mounted on manganese bronze cross members, and can be dropped from the bottom of the car in twenty minutes without dismantling the steering gear, dash or any other parts. The carburetor is of the multiple jet type.



Side of W. F. S. Chassis.

Fig 1. This new car has a 4-cylinder motor 4⅛x5¼ rated 20-25 h. p., cylinders cast in pairs. Wheel base 112 in Aluminum and steel body. Tires, 34x4 with Q. D. rims. Bosch dual ignition, multiple disc clutch shaft drive with two Spicer joints and full floating rear axle. Runabout $2,150. Fore door 5 passenger car $2250 up to limousine $3200.



New Pope-Hartford Ambulance.

This is a new Pope-Hartford Ambulance recently purchased by J. J. & F. Ahearn, of Hartford, Conn., and is one of the handsomest machines ever turned out by the Pope Company. The chassis is the regular Public Service chassis, with a 130-inch wheel base, 36-inch wheels, with 5-inch tires. The frame throughout is heavy and reinforced.

NEW POPE-HARTFORD AMBULANCE

We illustrate a new ambulance recently turned out by the Pope Manufacturing Co., of Hartford, Conn. Designed for a private firm, this ambulance is most handsome in appearance, resembling somewhat a limousine car, and complete in equipment. To those who dislike to use, even in an emergency, a police or hospital ambulance, this vehicle will prove most acceptable.

The chassis is the regular Pope-Hartford Public Service chassis. This differs from the chassis of the pleasure cars in only a few respects. The wheel base is 130 inches and the 36 inch wheels are equipped with 5 inch tires. The frame throughout is much heavier and reinforced in several places to withstand the increased weight of the special body. The regular stock 40 horse power motor is used.

The body is specially designed and differs in its equipment from the other ambulances that have been turned out at the Pope works. The inside finish is mahogany with all the metal parts nickeled. Electric light globes in the top of the car flood the interior with light. There is a very ingeniously contrived set of spring hangers to support the stretcher and relieve the patient from the many shocks and jolts caused by the unevenness of the streets and crossings. There are seats for the nurses or attendants and lockers to carry bandages and splints or whatever is needed by the surgeon. There is nothing lacking that would add to the comfort of those within, so comprehensive has been the forethought of the designers.

Our February Number—reviews of the New York Shows and forecast of the Chicago Show. Order Now!

THE "WAVERLY" ELECTRIC DELIVERY WAGON WITH SHAFT DRIVE

One of the latest offerings made by the Waverley Co., of Indianapolis, Ind., is their shaft drive electric delivery wagon, illustrated herewith.

The drive consists of herring-bone gears between parallel shafts—a drive that has been enthusiastically endorsed by hundreds

The "Waverley" Shaft Drive Electric Delivery Wagon

of owners of Waverly Electric pleasure carriages—and it remained only to adapt it to the uses of a light delivery wagon, and this was easily accomplished. The new model promises to revolutionize the delivery business of department stores, dry goods stores, milliners, grocers, laundries, and all that class of dealers which has many quick deliveries to make every day in the week and every week in the year.

The speed, lightness, handiness, and dependability of this electric make delivering

ALLIS-CHALMERS AIR COMPRESSORS

The convenience of compressed air about the garage is such that few garages are without an outfit of some sort, and the Allis-Chalmers Co., of Milwaukee, Wis., is making a specialty of motor driven air compressors.

Their outfits are regularly built in two sizes, AA-1, delivering 11 cubic feet of free air per minute and AA-6, delivering 16 cubic feet per minute. Either of these will furnish all the air that ordinarily is required about a garage. Special outfits can be built to meet demands for larger quantities of air if necessary. A complete garage outfit includes a storage tank, an automatic governor, gauge, fuse block, and switch, and hose and nozzle for inflating tires

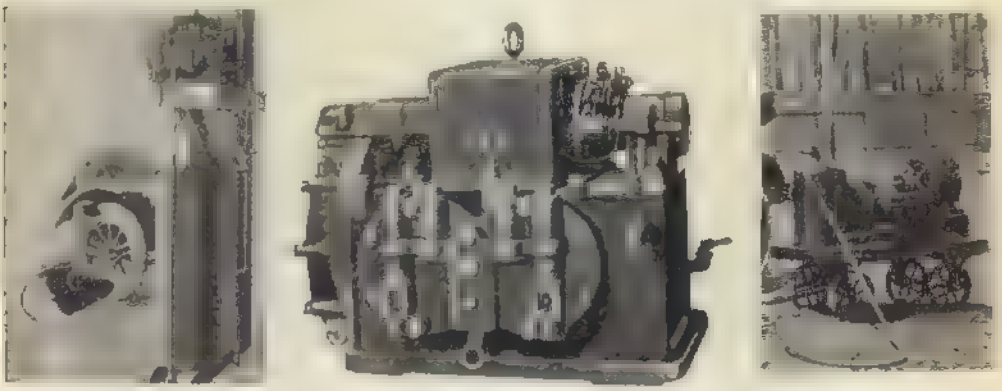
The compressors are built in the most compact form possible. They have two cylinders, each provided with a single acting piston, operated by a connecting rod from a drop forged steel crank shaft. This shaft is extended, at one end to receive a herringbone gear which meshes with the pinion of the armature shaft directly above. Provision is made for shifting the gear to care for any wear which may occur.

Allis-Chalmers motor driven air compressors can be furnished with either direct current or alternating current motors of any standard voltage. In all cases the motor is bolted firmly to the compressor. Compressors can also be arranged for belt drive instead of motor. Where it is so desired they can be furnished mounted on a truck with storage tanks. Such an outfit can be operated by connecting to the lamp socket of the lighting circuit.

The use of an automatic governing device, whereby the air pressure is maintained practically constant at all times, and by which the motor is automatically started or stopped as often as may be necessary, is a decided advantage. It eliminates all necessity for any hand manipulation of switches and allows the compressor to be set in remote or comparatively inaccessible places.

The lubricating system is complete and positive and all the working parts are continuously in contact with the oil. It is only necessary to fill the oil reservoirs once a month to insure constant lubrication.

The outfit occupies very little space and can be arranged in very compact form in places which could not be otherwise utilized. Piping can be run to all floors and as many leads taken off as desired. While the governor will be set to maintain the highest pressure desired, any lesser pressure can be obtained by the use of reducing valves.



An Allis-Chalmers stationary compressed air installation, motor and compressor, and a portable outfit.

THE "COMMON SENSE" REPAIR KIT

The Brooklyn Lock Co., of Brooklyn, N. Y., is putting on the market the "Common Sense" repair kit, which should be of much use to motorists. This kit consists of a cutter, made of tool steel, holder, pointer for pushing plug in tire, plugs, cement and emery cloth. The unique feature is that the plug is furnished with a linen loop, so that after the plug has been pushed through the tire it may be drawn tight against the inner wall and held in the proper position while the tire is inflated.

The "Common Sense" Repair Kit.

The Diamond Rubber Co., of Akron, Ohio, is now making the "Wiles" Tire Sleeve as the "Diamond" Tire Sleeve.

DEATH OF OCTAVE CHANUTE

Octave Chanute, the father of aviation and the heavier than air flying machines, died November 23rd, at his home, 1138 Dearborn avenue, Chicago.

Besides his fame as the pioneer of aerial navigation Mr. Chanute had a national reputation as a railroad engineer and bridge builder. Among the large bridges built by him was the Hannibal bridge at Kansas City, the first one over the Missouri River. It was dedicated in 1869. Mr. Chanute also designed and built the Kansas City stockyards.

Twelve years ago he invented the first glider which was the forerunner of the present aeroplane, the Wrights and others adopting, in a great measure, the principles shown by Mr. Chanute in his glider.

The Wright brothers have freely admitted that they received their stimulus from Mr. Chanute, an article written by him for the Aeronautical Annual in 1897 being used by the Wrights when they started their work in 1900. Mr. Chanute was consulted by the Wrights before they started the construction of their first model.

THE ILL-FATED WRIGHT RACER

In the accompanying illustration is shown the unfortunate Wright racing machine in which Brookins carried to earth the hopes of America, when he fell at the instant of starting in the International Race at Belmont Park, L. I. This truly remarkable little machine, a miniature of the larger Wright flyer, had but 120 square feet of supporting surface, yet carried an eight cylinder V type motor of 4⅝ inch bore and 4 inch stroke. The upper and lower planes were of equal size, being 3 feet deep by only 20 feet from tip to tip.

The engine was located to the right of the operator, as usual on Wright flyers. The control levers were, as usual, the horizontal rudder or elevating plane being at the rear. There were two vertical rear rudders and the skids at their forward ends were fitted with triangular planes to offset the side wind pressure on the rudders.

The propellers were arranged and driven as usual, but at much higher speed than the ordinary used. In witness of this fact, the photo herewith shown, a snap shot in bright sunlight, indicates that the rate of rotation was too fast for the camera.

The skids were about five feet apart, very short, about eight feet, each carrying near the rear two rubber band mounted wheels, and at the front a one inch pipe crosswise of the skids, also rubber band mounted carried two more wheels of very light construction.

The gasoline tank was vertical or rectangular form, ten gallons capacity, the fuel being forced to the engine by a small gear pump.

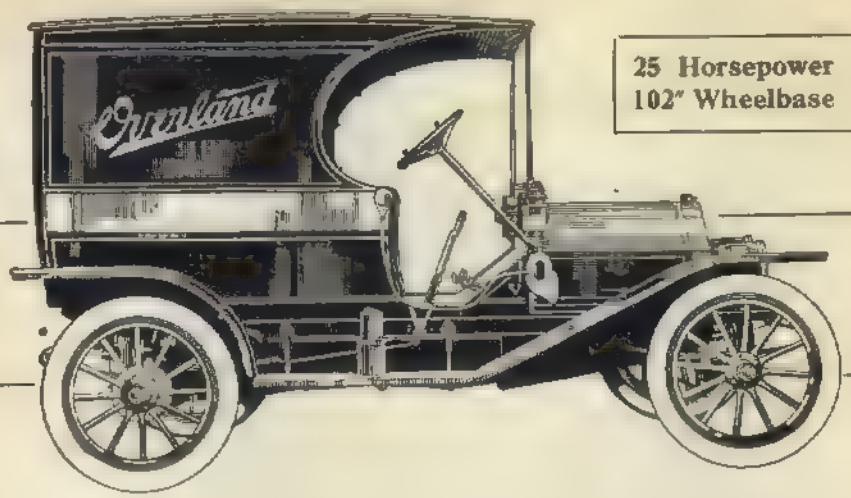
The Wrights claimed this machine was capable of 90 miles per hour. It has been rebuilt and undoubtedly will be heard from in the future.

"FRANCAISE AMERICAINE AEROPLANE CIE"

The French-American Aeroplane Co. has been in existence about two years, first in New York City, and now in Mineola, L. I. They have built some 17 machines of various types—Curtiss, Voisin, Farnum, Antoinette, Bleriot, Demoiselle, etc. All parts except the motor are made in the factory at Mineola, 18 experts being employed, including a Japanese expert propeller maker, who has had much experience in making propellers for the Japanese, French and American navies. His propellers are sold at from $50 up.

The Wright Racer.

This little machine has but 120 sq. feet of surface and 8 cylinder V motor 4⅝ by 4 inches. Orville Wright is in the seat, Hoxsey at the right and Brookins at the left. This machine was wrecked at the start of the International Race, Belmont Park, L. I., but has been rebuilt.



25 Horsepower
102" Wheelbase

OVERLAND DELIVERY CARS—WINNERS OF THE GOVERNMENT TEST —PRICE, $1,000

For two years, Overland Delivery Cars—like the one pictured above—have been used in the Government Mail Service in Indianapolis

Each one has done the work of three horse-drawn vehicles. Each has covered from 60 to 75 miles daily—winter and summer, rain and snow without missing a single trip. They have done this for two years and are doing it still.

Recently these cars won the Government test for automobile mail wagons, conducted at Philadelphia. There were entered in this competition practically all other makes of similar automobiles, and the Overland won against all of them.

Of all the myriad uses to which these cars are put the Mail Wagon test is the most severe.

Mail Wagons must make their regular trips, every day of the year, regardless of weather. There have been times at Indianapolis when the snow put a stop to all other traffic, but the Overland Mail Cars made their trips.

Mail wagons must be dependable—must always keep running—for the mails cannot be delayed.

They must cover from 60 to 75 miles daily, making innumerable stops.

They must be simple, so any man can operate them. They must be easy to care for, as the operators are usually novices. They must be practically trouble-proof.

Overland Delivery Cars, for two years, have met all these requirements. They have won against all competition in the Government Mail Wagon test. The cars which have done this are the best possible cars for any delivery purpose.

There are thousands of storekeepers and others who would be using these cars if they knew the facts.

A car which enables one man to do the work of three men and three horse-drawn vehicles is bound to be an economy.

We want to tell you the facts—to show you the cars—to demonstrate what you can do with them. Write us when to call.

Made with enclosed and open Express Bodies

THE WILLYS-OVERLAND COMPANY

TOLEDO AND INDIANAPOLIS

NEW TIRE PRICES

Independent Tires

(Wrapped Type)

Size	OUR PRICES: Unguaranteed	Guaranteed
28 x 3	$11 79	$14.69
30 x 3	12.66	15.83
30 x 3½	18.66	23.33
32 x 3½	19 80	24.75
34 x 3½	21.60	27 00
30 x 4	25 26	31 64
31 x 4	26.16	32.70
32 x 4	27 12	33.90
33 x 4	28.14	35.18
34 x 4	28 98	36.23
36 x 4	30 87	38.59
34 x 4½	36 23	45.29

THE SAME TIRE

Flaps to use on Q. D. Rims, $1.50 extra.
Write for prices on other sizes.
State style and make of rim.

Through an improved process it has become possible to manufacture a tire with the saving indicated above.

Will show in space 423
11TH NAT. AUTOMOBILE SHOW
Madison Square Garden

Room 11, Mail Order Department

AUTOMOBILE TIRE COMPANY, Inc.
1625 Broadway, New York City, N. Y.

The Oldest Automobile Tire Jobbing Concern in the U. S. and Largest in the World

The Cleveland Speed and Time Indicator

A Stop Watch on Your Car

The application of the escapement principle of the clock, combining the two elements—time and distance—marks a distinct advance in speedometer construction. The time feature is characteristic and distinctive of the Cleveland instruments

These instruments will be on exhibition at Madison Square Garden, January 7th to 21st, during both the pleasure and commercial vehicle automobile shows. A new descriptive catalogue shows the complete line and will be forwarded upon request.

The Cleveland Speed Indicator Co.
1806 Euclid Avenue - Cleveland, Ohio

—you can prove it by your watch

"THOROUGHBREDS"

Beilfuss Motors

Every detail finished with unequaled elegance

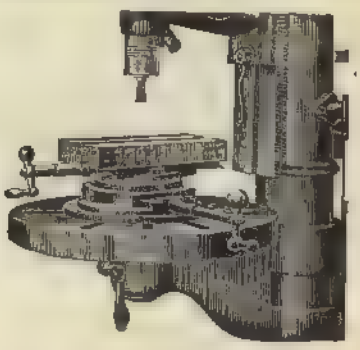
Air Cooled - - 10-12 H. P.
Water Cooled, 10-12 and 18-20 H.P.

Have been giving satisfactory service for years, and for 1911 will be even better than ever.

BEILFUSS MOTORS stand without a peer for endurance and dependability, as these motors represent the maximum of efficiency with the acme of simplicity.

Let us send you our explanatory literature.

BEILFUSS MOTOR COMPANY
LANSING, MICH.



The **"Davis" Milling Attachment and Compound Table** for the drill press for garage, repair and machine shops. : : :

WRITE FOR PRICES

The Hinckley Machine Works
Hinckley, Ill.

HIGH GRADE AUTOMOBILE HORNS

Our prices are very "attractive"

37 New Styles of Horns

We produce 4,500 Auto-Horns weekly

For the last 8 years we have supplied and are still supplying the best grade Automobile Manufacturers with our horns

IT is a known fact that we are the pioneer Automobile Horn Manufacturers in America. Our vast experience has made us masters in this line. The supremacy of our product can be easily demonstrated by a rigid comparison with the imitation. We manufacture high-grade horns only. Made from best material and most advanced manufacturing methods.

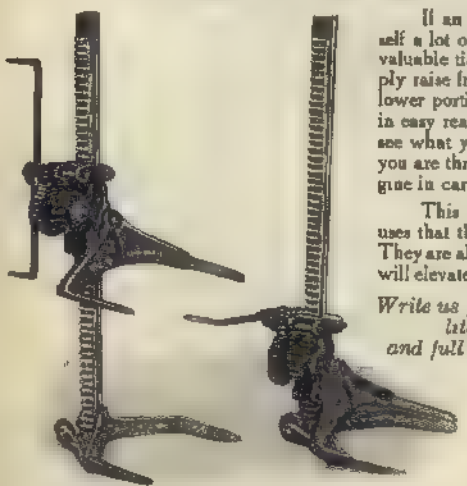
AUTOMOBILE SUPPLY MANUFACTURING CO.

220-222 Taaffe Place

BROOKLYN - - N. Y.

Big 4 Auto Jack Equipment for Garages

There is absolutely no need to lift your engines out of your cars with a crane when all adjustments can be made easily, accurately and quickly by raising up either one or both ends of your car with the Big 4 Auto Jacks. They have actually been tested to elevate THREE TONS 34 inches clear of the floor.



If an adjustment is necessary in your Crank Case, don't make yourself a lot of work by raising the engines out with a crane, because it takes valuable time to disconnect and connect them together again. But simply raise front end of car to desired height with our Jacks and remove lower portion of crank case. You have plenty of room, light, with tools in easy reach, and your car is in an inclined position so that you can see what you are doing. After the adjustment is made, lower car and you are through instead of working a half day longer to connect the engine in car again.

This is but one of the many uses that these Jacks can be put to. They are always ready for work and will elevate a car in half a minute.

Write us for descriptive literature and full information

PATD.

It is easy to adjust and inspect the under part of the car when in an inclined position

G. E. TRAVIS CO., Factory and Main Office: **Henry, Illinois**

Enjoy Your Car at Night

You can't do it unless you have confidence in your lamp equipment.

And thousands of motorists will tell you that you can't have absolute confidence in your lamp equipment unless it consists of

Solar Lamps

Most of the high-grade American cars are regularly equipped with Solars.

Thousands of other motorists use them as the result of experience.

Don't be satisfied with less.

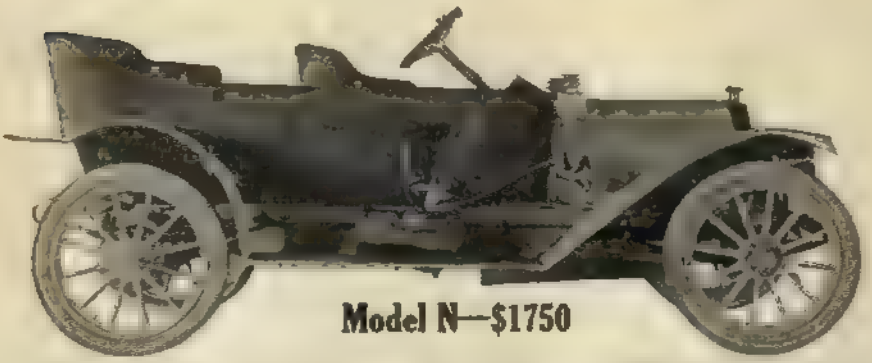
Our descriptive catalog is free.

Badger Brass Mfg. Company

Kenosha, Wis.
New York City

AUBURN 1911

"The Most for the Money"



Model N—$1750

Do All Motor Cars Look Alike to You?

No, of course not but have you learned to designate between the car of real looks and **the car of real quality?** It's that real quality underlying the exterior of AUBURN CARS that commends them to the man who wants real automobile comfort and not automobile worry.

There's all the difference in the world in the kind of satisfaction owners obtain from their cars and the amount of satisfaction is not proportionate to the original price of the car. **It is not the price that counts, it is the quality of the car,** and it's the quality that gives the highest satisfaction to the owner. Quality is incorporated into every part of the AUBURN 1911.

And the looks of the AUBURN as well simply command the attention of those thinking of purchasing an automobile. **In the whole wide field of automobiles made in the United States, there is not another single example of a car with such well-proportioned size, such refined lines, and such superior finish.** The men who admire motor cars for their looks and who are attracted by the car of luxury as it moves along the street are invariably attracted by the AUBURN; and the man who appreciates motor cars most for the good mechanical qualities they contain looks with wonder at the marvelously well-designed and finished construction, and looks with admiration at the unique and highly creditable performances of AUBURN CARS.

We have taken great pride in the splendidly preserved appearance of AUBURN CARS that have been in constant use for several years. AUBURN CARS are the cars that last. You do not need a new car every season, for every piece entering an AUBURN CAR and every inch of finish is as thoroughly and carefully carried out as if the AUBURN were a five thousand-dollar car. But the AUBURN is a forty-horse power car with fore-door body for $1750.00.

For looks, for durability, for hill-climbing, for general usefulness at the price asked, AUBURN 1911 cars are absolutely unequaled. The magnificent record for durability, economy and satisfaction behind AUBURN CARS together with their elegant looks and their unusually low price furnish evidence uncontrovertible and unchallenged.

Read over these 1911 specifications if you have any doubts:

Motor: four cylinders, 4½ x 5; 5-bearing crank shaft, 36" wheels.
Hess Bright Ball Bearings in transmission.
Chrome tanned leather faced cone clutch.
Semi-elliptic front springs, ¾-scroll elliptic rear.
Selective transmission. 120" wheel base.
Shaft drive with bevel gear differential.
Painted royal blue or battleship grey.
STANDARD EQUIPMENT:—3 oil lamps, 2 gas lamps with generator; jack and full set of tools; Remy magneto.
PRICE: $1750.
The chassis mounts touring, close-coupled and roadster bodies.

Model L "30," on same general lines and construction as N, 112" wheel base; 34" wheels, $1400.00. Models G & K, $1000.00

CATALOGS READY. SOME OPEN TERRITORY FOR THE RIGHT MEN

AUBURN AUTOMOBILE COMPANY, AUBURN INDIANA

1911 Bergdoll "30"

BACKED BY MILLIONS

"Louis J" Runabout
PRICE, $1,600

Touring Car
PRICE, $1,500

Roadster
PRICE, $1,500

IN offering our 1911 car for the public's approval we are doing so after two years of experimental work, embodying in a popular priced car all the practical features and advantages of the best foreign and domestic development.

In design and construction the Bergdoll "30" is simplicity itself and will give the reliability, efficiency and comfort of cars of double its market value. In manufacturing nothing has been forsaken that has proven its worth and we have adopted nothing without the most relentless tests. It is not remarkable in any one particular at the expense of all others and will meet the reasonable requirements of the average automobilist.

Contrary to the customary rule of building from one to three experimental cars, we built fifty of these machines and put them into taxicab service and they were turned over to inexperienced operators. These cabs at this writing have covered from seven to ten thousand miles with the best results.

One of the strongest claims which we make to any prospective buyer of our product, is that we recognize our obligations to that customer as only beginning when he contracts for one of our cars, and we make every possible effort to care for each owner and see that he continues to obtain from his car the satisfaction that he is entitled to.

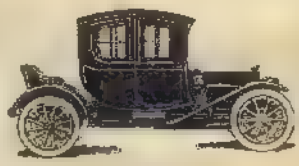
We consider the buyer the "court of last resort," and from his decision as to the merit of our car there is no appeal. The satisfied owner is the best salesman, and it is our hope to have fifteen hundred persons this coming season engaged in selling Bergdoll "30's" to their acquaintances, explaining the points of superiority and proudly demonstrating their efficiency.

Louis J. Bergdoll
President

Toy-Tonneau
PRICE, $1,600

"4 Door" Touring Car
PRICE, $1,600

Coupe
PRICE, $2,000



Colonial Coupe
PRICE, $2,500

Limousine
PRICE, $2,500

Town Car
PRICE, $2,600

We will exhibit at the Eleventh Annual International Automobile Show, Grand Central Palace, New York City, from December 31st to January 7th. Our exhibit will be located in Section "G" on the main floor.

DELIVERIES ARE BEING MADE ACCORDING TO SCHEDULE

Complete description and Specifications appear in our Advance Folder. Address Dept. S

Louis J. Bergdoll Motor Company, Thirty-First and Dauphin Sts. Philadelphia, Pa., U. S. A.

YES

YOU CAN EQUIP YOUR CARS WITH

Rust Proof
ANCHORIDE FINISH
Door Hinges

at no greater cost than with the plain malleable hinge.

SAMPLES FOR THE ASKING

OUR PRODUCT INCLUDES

Door Handles—Grab Handles
Lamp Brackets—Garment Rails
Foot Rails Fasteners Buckles—Snaps
Brass, Bronze and Malleable Iron Castings

NORTH & JUDD
MANUFACTURING CO.
NEW BRITAIN, CONN.

Does your Gasoline Motor run smoothly? If not, send 10 cents postage for handy 58-page text-book, "Carbureters and Engine Troubles." Gives remedy for every motor trouble.

BREEZE AUTOMATIC CARBURETERS

AUTOMATIC

Standard on all gasoline motors—none better for flexibility, power and economy have solid metal float,—cold trial draught—large wearing parts—petcock for drainage—no tools needed for adjustments; single connection supplied. Both our M. C. and A. A. Motorcycle Carbureters are especially designed for motorcycle service—connected easily.

M. C. and A. A.	$10.00	1½-inch	$14.00
¾-inch	10.00	1½-inch	18.00
1-inch	12.00	2-inch	34.00

Special light weight STRAINER, $1.00—prevents dirt, water, etc., entering Carbureter, insures clean fuel. Our $1.50 STRAINER is larger in settling chamber area.

Representatives: General Sales Co., 188 Jefferson Ave., Detroit, Mich. R. A. Seaman 205 Coleman Bldg. Philadelphia, Pa.; J. H. Hopp, 1893 No. Sawyer Ave., Chicago, Ill., Geo. C. Webber, 135 W. 17th St., New York, N. Y.

Breeze Carbureter Co.
250-252 South St., Newark, N. J.

Uautoil
With HARRIS
AUTOIL

Because If you are having carbon trouble from the Cylinder Oil you are using, we guarantee the use of HARRIS AUTOIL will remove it.

Because HARRIS AUTOIL has such efficient lubricating without carbonizing qualities, that we will ship it to any city in the United States, prepay all freight charges, and after it arrives, will allow 30 days' trial for you to judge its merits—before you pay. If AUTOIL proves unsatisfactory in any way, it may be returned and no charge will be made for what is used.

Because If you use HARRIS AUTOIL once and become acquainted with its excellence, you will be a constant user.

Because There is no substitute for HARRIS AUTOIL and our guarantee protects you if AUTOIL does not remove your carbon trouble.

YOUR DEALER CAN SUPPLY YOU
IF NOT, WRITE DEPT. C

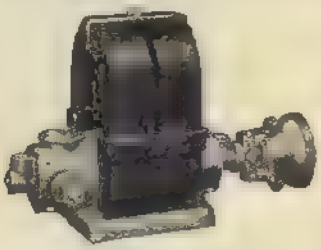
HARRIS OIL CO., Muncie, Indiana

Our BOOKLET, telling how Crude Oil is Refined, and sample AUTOIL, free on request.

Star Magnetos

(LOW TENSION)

For Commercial Vehicles



A direct current magneto with vibrating coil, owing to simplicity in construction has been demonstrated to be the most satisfactory source of ignition for commercial cars.

This system does away with the complications and troubles of the high tension system and is rapidly gaining favor and being adopted by the leading manufacturers.

Write for particulars.

HERCULES ELECTRIC CO.
Indianapolis, Indiana, U. S. A.

S. C. S. Simplex Tire Trunk—$6

No. 13—Patent Pending

Look for Trade Mark

Bass-wood body, enameled cloth covered, linen lined, well bound and stitched. Heavy harness leather straps hand riveted to steel reinforcements. The flat top fits either clincher or demountable rim.

"S. C. S. AUTO LUGGAGE"
Strong, Convenient, Satisfactory
WRITE FOR CATALOGUE T

S. C. SIMON & CO.
1020 Race Street, Philadelphia, U. S. A.

Manufactured by
S. C. SIMON & CO. Auto Luggage PHILA., U. S. A.
TRADE MARK

SHAWMUT TIRES

"Proved Best"

SHAWMUT TIRE COMPANY

Factory at Watertown, Massachusetts — BOSTON, MASSACHUSETTS

Helmet Oil

ABSOLUTELY PURE

No Lime—No Rosin—No Pitch

Solidified Oil for Automobile Bearings

Can be used in all climates and seasons; insensible to temperatures ranging from -40° to +200° Fahrenheit.

The highest priced lubricating grease on the market and the cheapest for the automobile owner.

The best for over fifty years. Nothing else like it. Insist on the genuine HELMET OIL in Yellow Enameled Cans with our Registered Trade Mark stamped in top and bottom of can. Ask for free test sample to try.

CHARLES H. BESLY & COMPANY, CHICAGO, U. S. A.

"EAMES" SOCKET WRENCHES

FOR
SUPPLY TRADE

New Attractive Sets—Liberal Discounts—Electros for Your Catalog FREE

Large Sets, $8.00. Small Sets, $4.00. Spark Plug Wrenches, 50c.

FOR
MANUFACTURER

Wrenches to Meet Your Special Requirements. Our Goods and Prices will Please You

Distributors—B. H. Aust, New York — Tri-State Auto Supply Co., Minneapolis — Morris Hardman, San Francisco

5-Passenger Touring Car
$1850.00

CASE CARS

The Car with the Famous Engine

It is a *Silent* Wonder

How to Judge a Car

In choosing your car be sure to **specialize** on the engine.

A big, handsome body is easier to see—but the body does not make the car.

Elegant appointments and luxurious fittings appeal more on first sight—but they do not make the car.

The agent's conversation may be very agreeable and convincing—but **that** does not make the car.

The car is what its engine is—nothing more

The Case has a big, handsome body, but the market is full of good makes of automobile bodies and we claim little credit for that.

The Case has the appointments and fittings—but these are easy to buy and we claim little credit for them.

But the engine, **used exclusively in the Case car,** cannot be bought by anyone else on the market.

Send for catalog 13

J. I. CASE THRESHING MACHINE CO.

Racine, U. S. A. Wisconsin

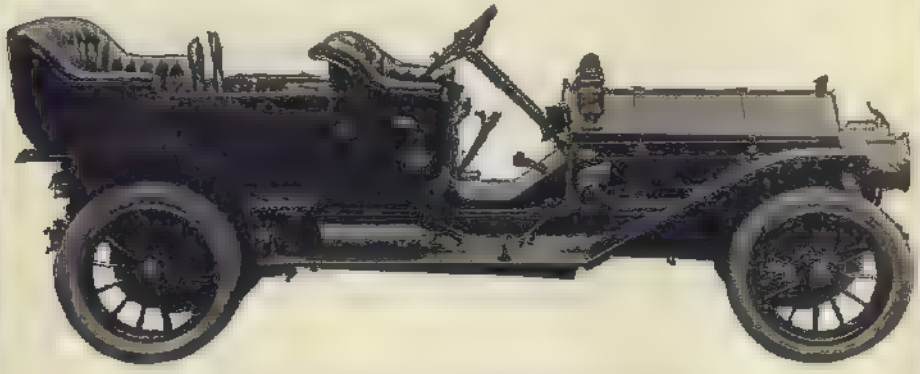
The Chadwick

Car for 1911 will be on View at Madison Square Garden January 7th-14th, 1911 in

TOURING CAR
TOURABOUT
RUNABOUT
} **Models**

ALSO CHASSIS

Our Personal Representative will be in charge of the Exhibit to attend to all inquiries.



THE CAR OF EXCLUSIVENESS

Chadwick Engineering Works

Pottstown, Pa.

"Facts from Fairmount" and New Catalog on Application.

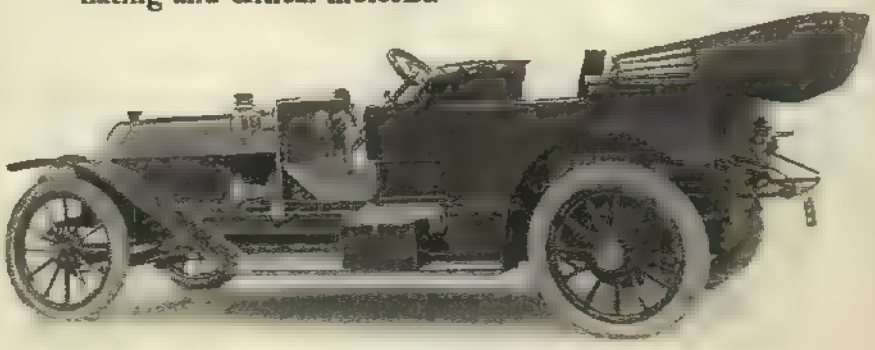
LICENSED UNDER SELDEN PATENT

PENNSYLVANIA

4 AND 6 CYLINDER CARS

are unsurpassed in quality but are sold at a lower price than other cars of similar class

Pennsylvania motor cars are built in their entirety in our own shop, where the equipment and facilities for producing cars of the highest class are unexcelled. The materials used are the very best obtainable, the workmanship is the most skilled, and every step of construction undergoes the most critical inspection. The resultant product is a car that in design, construction, finish and equipment is as distinctive as it is unrivaled. Characterized by extreme smoothness, silence and flexibility, it has all the speed and power that any reasonable man wants and will afford the utmost satisfaction in every essential feature to the most discriminating and critical motorist.



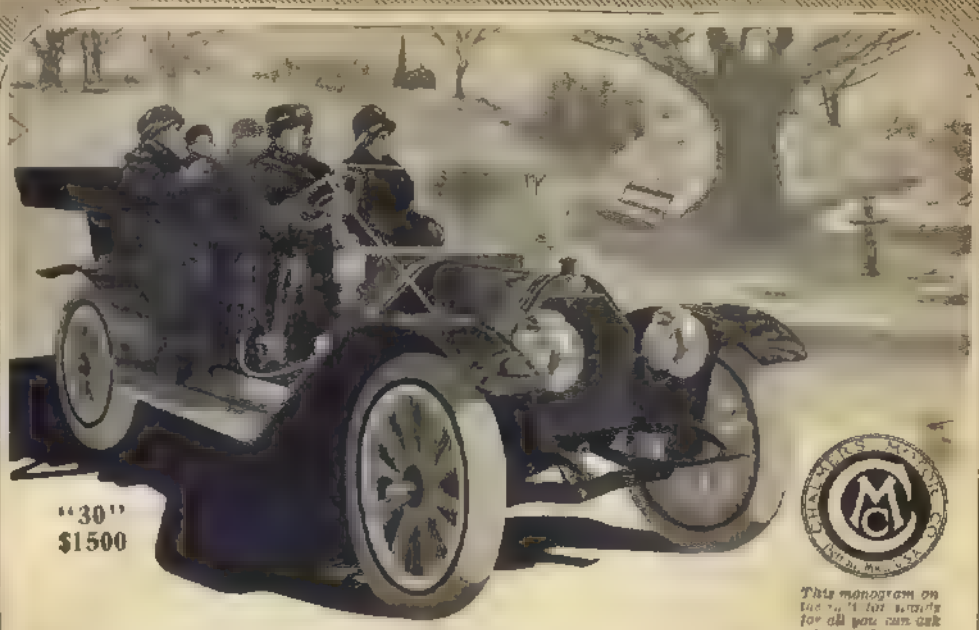
Type "H"

Type "D-25," $2000
Type "C-50," $3000
Type "F-6," $4500
Type "H-6," $4700

Send for our catalog containing the Pennsylvania story.

There is some territory open to live agents who want to handle a car of exceptional merit.

Pennsylvania Auto Motor Co., Bryn Mawr, Pa.



This monogram on the radiator stands for all you can ask in a motor car

Our Guide for Buyers

The season of Automobile Shows is here. An excellent chance for careful comparisons as the cars stand in a row side by side.

The multitude of cars and the claims of salesmen are confusing, especially to first-time buyers. So here follow a few points which may be used as standards when selecting and buying.

First, learn if a car has proved itself a good *machine*, considered purely as a machine. Service in the hands of owners and performance in contests are the only absolute proofs. This test will dim many cars.

If there are many good cars nowadays, mechanically considered, After you have settled on several that are, in your opinion, of about equal merit as *machines*, compare them from other viewpoints.

Beauty first. There is beauty of line and beauty of finish, and beauty in a motor car is deeper than paint. It goes down to the materials and the construction. It means something in addition to eye-delight.

Then look carefully to the matter of comfort—comfort for the passengers and comfort for the driver. Comfort and mere bigness don't necessarily go together.

During demonstrations note how the cars treat you when going over rough spots; note how you feel after riding for an hour in different cars; note whether the seats have springs in them, whether they are tufted with hair, the cushion fits your back at different angles or not.

Observe the springs in different cars, how they act when called into play. Observe how bodies are suspended, whether they hang between the axles or whether the foreman seat is high over the rear axle. Note whether the center of gravity is low or high.

Some cars are without grace. They are stiff. They lack resiliency. They *feel* hard and harsh as you ride in them. Such cars lack the pure comfort which distinguishes those which ride like Chalmers cars.

Get behind the steering wheels of other cars. Note whether your position there is comfortable, whether the gear shift lever and the emergency brake lever are right at hand or whether you must stretch over to reach them. Note the position of the pedals, of the throttle and the accelerator. And do the same with the Chalmers car.

Look carefully to the four main factors of safety: frame, wheels, steering connections, brakes. You cannot examine these with too much care. Examine the refinements—the wood in dash and door strips and body, the levers, the pedals, the door-handles and locks, the floor coverings, foot rests and all other "little things." See what they are like on other cars. Then on the Chalmers.

Scrutinize the workmanship on the chassis of the Chalmers. Look at the motor, see what a neat, clean job it is. Then note the simplicity in the design of the car from end to end.

See if you don't conclude that every detail of this car indicates that it was designed by those who know, and built by skilled workmen who take pride in doing their work well.

Comparison with all other cars has sold more Chalmers than all our advertising. A feature of our complete exhibits at all leading Automobile Shows this winter will be a cut-out chassis of the Chalmers, showing every moving part exposed and in operation. We are proud of every part as shown there.

There always a Chalmers dealer near you. He is a busy man but will always find time to answer with courtesy and intelligence your questions, and to demonstrate thoroughly for you the Chalmers cars— 30," $1500; "Forty," $2750. *Catalogue AJ on request.*

CHALMERS MOTOR COMPANY, Detroit, Michigan

(Licensed Under Selden Patent)

Don't Think Thoughts Six Years Old

Many a business man has said, "I'm not enough of a mechanic to run an automobile and I can't afford to keep a chauffeur or pay big garage bills to keep my car in order."

The man who says that is thinking in terms of six years ago.

Six years ago such a statement would not have been so far amiss. But the world has moved in six years and the making of automobiles has shown more progress than nearly anything else.

You can buy a real automobile now for as low a price as $1500. It is so simple to operate that you can, and should, drive it yourself. It is so trouble-proof you won't need to keep it in a garage and have high-priced mechanics tinkering with it all the time.

Six years ago there was scarcely a real automobile to be had at any price. But now just look around you. See the thousands of men like yourself who use them constantly. Talk to your neighbor who has one. He will give you the straight tip, if you can ever get him to talk pocketing himself in the fresh air long enough to do it.

There are many good cars nowadays, and any good car made by one of the well-established companies is a good investment.

Of course, we would like the privilege of showing you the Chalmers before you buy. We know that we have exceptional cars, yet if we can't convince you that we offer better value for a dollar or dollar than anyone else, why that is our fault, not yours.

CHAMPION

SPARK PLUGS TERMINALS
MISSKIP DETECTORS CABLE

OUR TRADE MARK IS A GUARANTEE OF QUALITY

Patent applied for.

Patents Pending.

Fasten Wire Terminal Here.

Actual Size

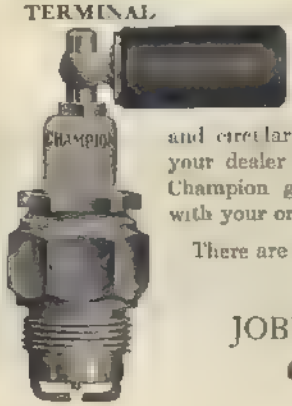
Misskip Detector Attached to Spark Plug

PRICE LIST

SPARK PLUGS All Sizes		MISSKIP DETECTOR Ignition Trouble Finder	
Regular ... ... each,	$1.00	1-Cylinder, Single, ...	$1 00
Mica . ..... "	1.00	2-Cylinder, Set 2,	2 00
Magneto		4-Cylinder, Set 4,	4 00
Pa ent	1 .5	6-Cylinder, Set 6,	6 00
Mot cycle	1 00	Fits any Spark Plug	

¶ THE MISSKIP DETECTOR with its visible spark completely insulated by glass tube and rubber protector arms, and ease of adjustment with the motor running, makes it possible for anyone to instantly locate the cause of one's ignition troubles by simply following the directions accompanying every set.

CHAMPION TERMINAL



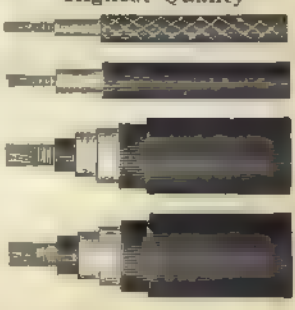
WRITE AT ONCE
for our
"CHAMPION NEWS"

and circular matter on Champion products. If your dealer or jobber does not carry genuine Champion goods in stock, please send his name with your order direct to us.

There are imitations! WATCH OUT.

JOBBERS AND DEALERS
Get our 1911 prices.

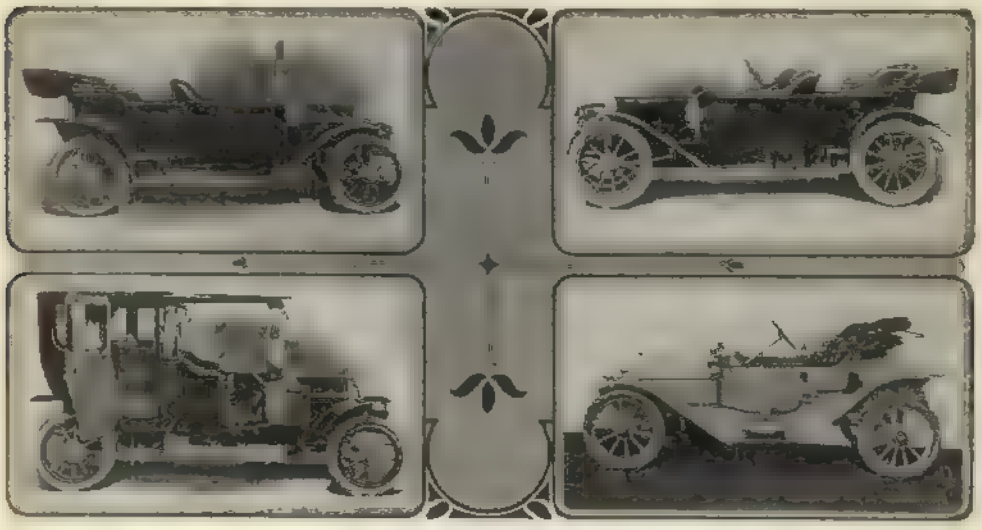
CHAMPION
Imported French Cable
Highest Quality



THE CHAMPION SPARK PLUG CO., Toledo, Ohio

Firestone-Columbus for 1911

The Columbus Buggy Co., of Columbus, Ohio, has just announced the 1911 line of Firestone-Columbus cars. The principal models all have left-hand steering with inside center control levers. Left hand drive is slowly but surely becoming more prevalent as more and more manufacturers realize its advantages, and the Firestone-Columbus has adopted it as the safest and most convenient. As the change gear and brake levers are placed in the center in most of the models, those accustomed to right hand drive and right hand operation of these levers will experience no difficulty in changing to this form of left hand drive.



A Group of 1911 Firestone-Columbus Cars.
A feature of these cars is the left hand steering with center placing of the control levers. In the upper left hand corner is seen the light 6-passenger fore-door car, underneath it is the limousine, while in the lower right hand corner is the torpedo roadster, the 5-passenger fore-door family car being above it

The Models.

The four principal models for 1911 are the 5-passenger fore-door family car, the limousine, the torpedo roadster and the light 6-passenger fore-door.

The Family Car has left hand steering, with center control levers. The engine is 42 horsepower, cylinders 4½x5. The ignition is dual, with two sets of spark plugs, Atwater-Kent distributor and Mea high tension magneto.

All bearings are imported annular ball. The wheel base is 120 inches, giving very easy riding qualities.

The equipment is very full, including top, windshield, speedometer, magneto, lamps, prest-o-lite tank, horn, tools, pump and jack and the car has a sturdy but handsome appearance.

The limousine likewise has left hand steer with center change gear and brake levers. The front is semi-enclosed, and the appointments are well up to the standard of limousine luxuriousness and completeness.

The power plant, which is the same as that of the Family Car, is mounted on a sub-frame complete—engine, flywheel and transmission. The four cylinders, cast in pairs, have a bore of 4½ and a stroke of 5 inches. Dual ignition system is used, and the motor develops 42 h. p. at 1200 r. p. m.

Torpedo Roadster.

The Torpedo Roadster is an original design and has attracted much attention and called forth much praise. This has a 30 h. p. engine, 4 1-16x4. Ignition, dual system with Splitdorf magneto. The clutch is of the leather faced cone type, with brass inserts. The selective type sliding gear transmission gives three speeds forward and reverse. The rear axle is semi-floating. Bear-

The motor of the Firestone-Columbus Family Car and Limousine. This has a bore of 4½ and stroke of 5 inches, and develops 42 h. p. at 1200 r. p. m. Ignition is by dual system, with two sets of spark plugs, Atwater-Kent distributor and Mea high tension magneto. Engine, fly wheel and transmission are mounted in a sub-frame

OUR FULL LINE OF
INVADER OIL

WHAT we save in advertising space and large general expense accounts for its maintained high quality.

Our business has increased each year, which proves to us that the policy we have adopted is the right one.

If we have to cut the quality to meet competition, we will give the public fair warning by lowering the price.

SOLE MANUFACTURERS

CHAS. F. KELLOM & CO.

113 Arch Street, Philadelphia

New England Branch
284 Columbia Avenue
Boston, Mass.

Hartford Agents
Palace Auto Station
Company

A FULL YEAR AHEAD OF THEM ALL

in construction, style and value at the price

THE COLBY 40

$1750

Develops Power of a "50"

Dealers have never before had an opportunity to supply the public with a car of this character *at the Colby price* The *demand* is unlimited, as every dealer knows.

The coming of the Colby is a boon to live dealers, as well as a "big buy" for the motorist.

Where can you find these specifications on *other* cars selling at less than $2500?

SPECIFICATIONS:

BODY Standard touring [illegible] Seating [illegible]

MOTOR [illegible] H P [illegible] Bore 4¼, stroke 5½ [illegible] Valves [illegible] Cycle four

LUBRICATION System, circulating inside pump Vertical shaft worm driven pressure feed to [illegible]

COOLING Water [illegible], centrifugal pump [illegible]

IGNITION [illegible] Bosch [illegible]

CARBURETION Carburetor—special fuel feed—[illegible]

CLUTCH [illegible] multiple disc Friction surfaces [illegible]

GEARS [illegible] Selective Sliding and Jump Three speeds forward.

TRANSMISSION SYSTEM: Shaft drive through Torsion [illegible] Rear axle—full floating.

BEARINGS Crankshaft [illegible] Camshaft [illegible] Clutch [illegible] Rear axle [illegible] Steering [illegible] Transmission [illegible] Patented [illegible]

RUNNING GEAR, [illegible] Wheelbase [illegible] inches [illegible] 56 Wheels [illegible] Tires front and rear [illegible] Springs [illegible] Brakes [illegible] Rear axle—pressed steel [illegible] rear wheel. Frame—pressed [illegible]

EQUIPMENT [illegible] Five [illegible] tire carrier, tire repair kits, tools, etc. [illegible] Top extra.

CONTROL Hand levers on steering wheel and foot accelerator

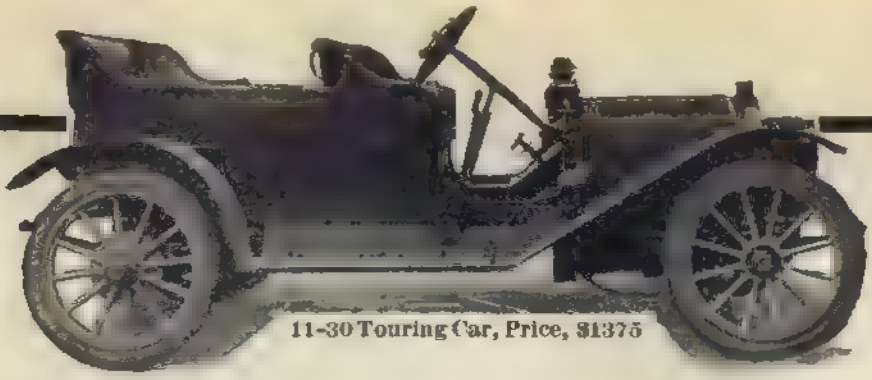
PRICE: $1750, f. o. b. Mason City.

DEMOUNTABLE RIMS. Every part standard. No new or freakish experiments. Will negotiate any hill or road any automobile ever covered

Liberal Proposition in Unoccupied Territory

Watch for us at the Coliseum, January 28th to February 4th, Booth No. 3, in the Basement

COLBY MOTOR CO., Mason City, Iowa



11-30 Touring Car, Price, $1375

CRAWFORD CARS FOR 1911

See Them at the Grand Central Palace Show!!!

MODEL 11-30 TOURING CAR is our popular, medium priced car, on which the wheel base has been lengthened, and the design of body changed to increase its comfortable riding qualities and the beauty of its lines. In its mechanical construction we have introduced a FULL FLOATING AXLE, carried on TIMKEN ROLLER BEARINGS,—increasing the security and durability of the car.

New Features for 1911

Full Floating Axles carried on Timken Roller Bearings.
Fore Door Bodies.
Crawford Twin Cylinder Motor.

MODEL 11-35 (illustrated below) is equipped with our own make of motor, 4½" bore, 4½" stroke; Splash Feed Lubrication; valves operated by single cam shaft; selective type transmission, located on rear axle; wheel base, 120"; carrying a fore door body of straight line design. Beautiful in proportion and finish

DEALERS: Get in on the CRAWFORD line for 1911 It's a mighty good and profitable proposition

PROMPT DELIVERIES GUARANTEED.

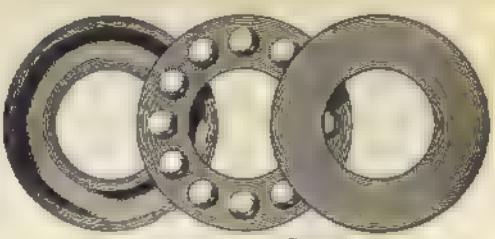
Crawford Automobile Company

HAGERSTOWN, MD.

11-35 Touring Car, $1650

THE STAR BALL RETAINER CO.

Lancaster, Pa., U.S.A.



Complete Thrust Bearing

Radial Retainers

Manufacturers of Radial Ball Retainers, Thrust Ball Retainers, Complete Thrust Bearings, Special Stamping, etc.

CURTISS MOTORS

are used exclusively on Marvel Motorcycles. Send for description of the 1911 model. Immediate shipment.

A few more desirable agencies will be placed.

MARVEL MOTORCYCLE CO.
Hammondsport, New York

RELIANCE Motorcycle

GET CATALOG AND PRICES

Reliance Motorcycle Co.
Owego, Tioga Co.
NEW YORK

Motor Cycle Supplies

New York Distributors of
MERKEL MOTORCYCLES
Send for Catalogue and bargain sheets.
Second-hand machines, $50 up.
Special motor cycle accessories, chain tools, etc.

F. B. WIDMAYER CO., 2312 Broadway New York City

SPROCKETS
for Bicycle and Motorcycle

WE MAKE 90 PER CENT OF THE SPROCKETS USED

THE PARISH & BINGHAM CO.
Cleveland, Ohio

THE FLYING MERKEL

Being the only motorcycle with a Spring Frame and Spring Fork it takes rough roads as easily as it does smooth ones. Send for catalog "A."

Merkel-Light Motor Co., Pottstown, Pa.

1911 Proposition on Bicycles and Bicycle Tires

Now Ready

Write for Prices

SIDNEY B. ROBY CO., Rochester, N. Y.

Minneapolis TWO-SPEED MOTORCYCLES

FRICTION CLUTCH
ON MOTOR

Write for Catalog

Minneapolis Motorcycle Co., Minneapolis, Minn.

Commercial Post Cards IN NATURAL COLORS

Made to order to suit your requirements. Make good ads., at reasonable prices. Send us pieces of your printed matter, but ask for *Samples* and *Prices.*

CHILTON COMPANY :: Market & 49th Sts., Philadelphia

THE GRAMM

GRAMM THREE-TON TRUCK

Furniture Dealers, Department Store Managers, Brewers, etc.:

The **Gramm Truck** is the best for your use because it has demonstrated its supremacy in gruelling road tests and by the satisfactory service it is giving **merchants to-day.**

It is built at our new plant at Lima, Ohio—one of the best equipped plants **in existence.**

The **Gramm Trucks,** from one to five tons, will give you a continuous satisfactory service, will greatly reduce your delivery cost and will enable you to increase your business by covering a larger territory than can be covered by **Horse-Drawn Vehicles.**

Exclusive **Gramm Features** mean much to prospective truck purchasers.

The Gramm combines Power, Simplicity, Accessibility and Economy.

INVITATION TO MERCHANTS AND PROSPECTIVE AGENTS

We will exhibit at the **Grand Central Palace Show,** starting December 31st, in the largest space, and will have on display the most complete line of **Trucks** ever exhibited.

Visit us if possible, and let us show you why the **Gramm Truck** is the leader in the Commercial Car Field.

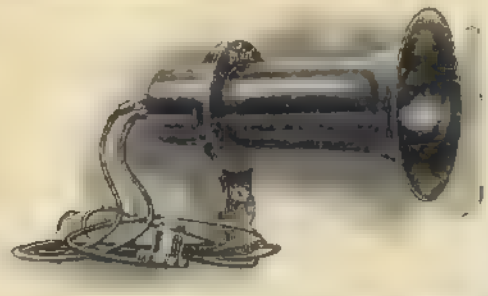
If unable to attend the show, write us for a demonstration.

The Gramm Motor Car Company

LIMA, OHIO, U. S. A.

THE DIXIE HORN

A standard automobile horn for sensible people"



Positively the most effective and durable construction possible.

The full volume of tone is reached from the moment of operation until contact is released.

The magnets are thoroughly well insulated and treated with moisture-proof compound.

No motor to cause trouble at important moments.

Built to last and covered by a guarantee which has back of it not only the prize of the article, but the reputation of a careful manufacturer.

For [illegible] dry batteries or six volts of storage. Effective but not offensive.

Attractive booklet entitled "THE CALL" and "THE LONG ROAD" on request.

Sizes—2 and 3 inch bells. Styles—Road and Marine. Handsomely finished in brass, nickel or gun-metal.

Price—Fifteen Dollars. Complete with waterproof cords and connections.

EDWARDS & CO., Inc., 14th & Exterior Sts., N.Y.

STOP CRANKING

Start your car **from the seat** with a

KEEN STARTER

A scientific device, built on scientific lines so arranged that with **a pull of the lever from the seat** will start the motor without the danger of that hazardous back-fire which has resulted so fatally.

THE STARTER THAT UNQUESTIONABLY ENDS THE ERA OF THE PRESENT CRANKING METHOD

Price, $50.00 each

Look for our exhibit, 11th National Auto Show, Madison Square Garden. Space 529 (Basement).

Your name on a post card will bring our literature.

KEEN STARTER COMPANY, 66 W. 43d Street, New York City

MR. DEALER

HERE ARE $$ FOR YOU

A chance for every wide-awake auto dealer to make some money. The dealers are waking up to the fact that they have been paying too much money to auto factories for their tops and are buying them from a *good, reliable, up-to-date auto top factory*, and saving from $15 to $25 per top. Multiply that by the number of tops you will use and see the saving. *Avoid cheap tops.* Get the best from a factory with a reputation. Ask anybody about "WARNER" tops.

Write for our latest 1911 catalog, samples and prices. *They'll surprise you.*

WARNER POLE & TOP CO.

1848-48-50 Central Ave., Dept. G, Cincinnati, O.

IT GETS AT THE HEART OF THE PUMP QUESTION

PATENTED

TIRES ARE EXPENSIVE, AIR IS FREE
WRITE FOR CATALOGUE

Remember, running with a flat tire, even though only for a short distance, is sure to be costly

Agents Wanted Everywhere

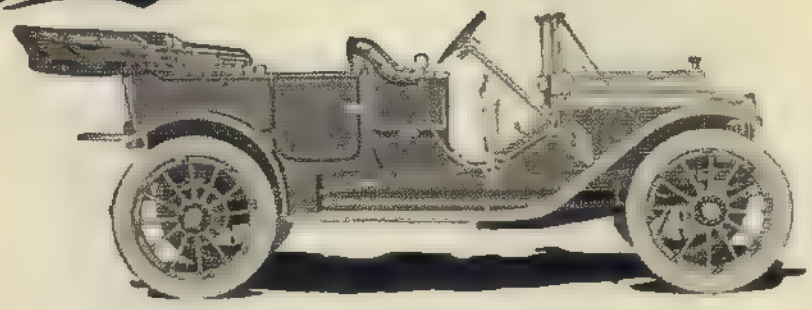
Send for our proposition

Hawthorne Mfg. Co., Inc.

37 SPRUCE STREET
BRIDGEPORT
CONN

HAWTHORNE FOUR CYLINDER HAND AIR PUMP.

Dorris 1911 Cars



$2500, Including

Top, Windshield, Tire Carrier, Speedometer, Prest-o-Lite Tank
36 x 4 Quick Demountable Detachable Rims

Dorris Motor Car Company :: St. Louis, Mo.

THE

A4—2 cyl., 20 h. p. $850

A5—4 cyl., 30 h. p. $1250

(Like cut)

McIntyre

PRICE, $1250

Licensed under Selden Patent

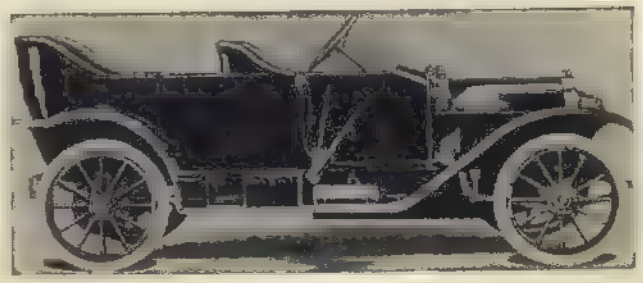
1911

T5—30 h. p. $1150

M5—40 h. p. $1650

T1—40 h. p. $1850

A Snap for Agents



Write Now for Territory

See exhibit at the Chicago Show, Space B-2, Main Floor, First Regiment Armory

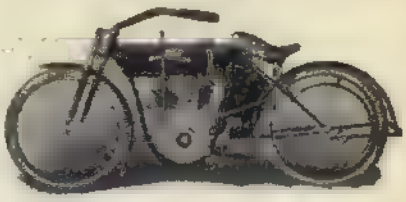
W. H. McINTYRE CO., Auburn, Ind.

QUALITY AND SATISFACTION

ARE FOUND IN THE

EMBLEM

MOTORCYCLE AND BICYCLE



4-5 H. P. SINGLE AND 7 H. P. TWIN CYLINDER

POWER AND SPEED

RESPONSIBLE SELLING REPRESENTATIVES WANTED

EMBLEM MFG. CO., Angola (Erie Co.), N. Y.

Distributors for New England: Bi Motor Equipment Co., 1777 Portland St., Boston, Mass.

Standard Motorcycle Parts

No. 3 MOTOR CYCLE PEDAL

are just a little bit better than anything else of the kind on the market. That's why machines that are **STANDARD** equipped sell quicker than others

STANDARD PEDALS wear well. They are strong and light, and the deep corrugations in the rubber hold the foot firmly and absorb vibration. They are reversible, thus enabling the rider to get the fullest service from them. Write for details of our complete line, which includes **Spokes** and **Nipples, Bridgeport, Star** and **Standard Bicycle Pedals, Sager** and **Standard Toe Clips.**

The Standard Co., Torrington, Conn.

A PERFECT AUTO CLOCK

KEYLESS

TO WIND, TURN BEZEL ONCE A WEEK

Models F and M
Offset Round Case—Polished Brass.
Model H. Seth Thomas—
2¼ inch Dial .....Price, $22.00
Model O. Phinney-Walker—
Price, $10.50

Model A
Seth Thomas
Offset Square Case.
Polished Brass.
2¼ inch Dial.
Model A. Price, $25.00

Models H and O
Offset Round Case—Polished Brass.
Model H.—Seth Thomas
2¼ inch Dial.....Price, $22.00
Model O. Phinney-Walker
Price, $10.50

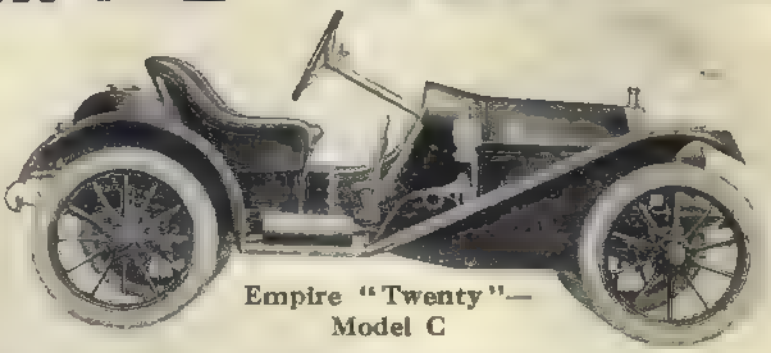
Seth Thomas is a high-grade, seven-jewel movement. Will keep excellent time and is built to stand up on an auto.

Phinney-Walker is a good movement, strongly built and gives splendid service for a reasonable price.

Send for Catalogue

PHINNEY-WALKER KEYLESS CLOCK CO.
81 East 130th Street, New York

EMPIRE "TWENTY" 1911



Empire "Twenty"—
Model C

Without any doubt the most exceptional value of the season

The entire plant of the Empire Motor Car Co., in Indianapolis, is devoted to the manufacture of this one model thus making it possible to reduce production costs to the minimum.

Read the following specifications and you will agree with us that we are building the best car in America for the price

MOTOR—T-head type, 20 H. P. quiet and efficient.

TRANSMISSION—Three speed selective type, mounted on annular bearings.

DRIVE—Shaft, through nickel steel bevel gears.

FRAME—Deep section pressed steel.

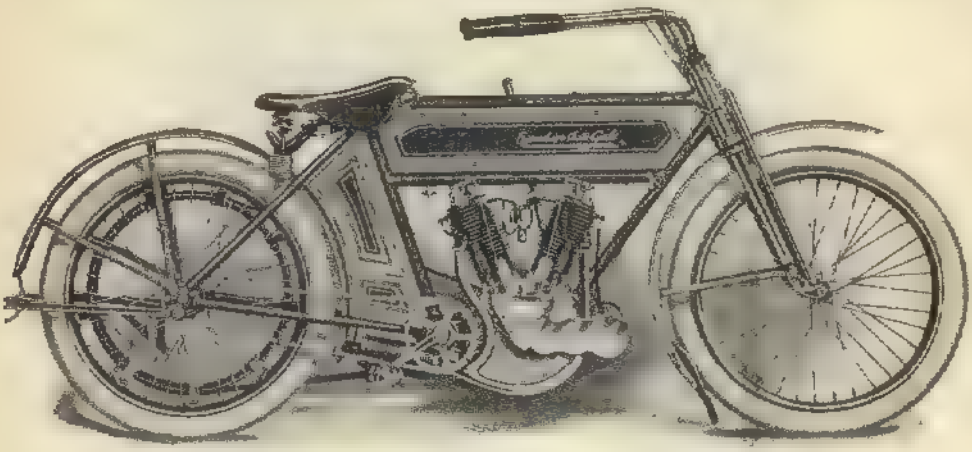
IGNITION—Imported Elsemann high tension magneto.

TIRES—32" x 3½" front and rear, Q. D. Rims.

EQUIPMENT—Gas Lamps Oil side and Tail Lamps, Horn, Tools and Kit, Tire Repair Outfit, Irons on rear for extra Tire.

EMPIRE MOTOR CAR CO., : Indianapolis, Ind.

EXCELSIOR AUTO-CYCLE



The Twin That is Right

¶ A rational combination of power and economy that affords the highest degree of practical efficiency.

¶ The same smooth starting, free motor effect that has made the Excelsior Single the leader of American motorcycles with the most powerful motor of the 50 cubic inch class ever built.

¶ Low Saddle, Perfect Balance and Positive Grip Control.

¶ The Excelsior straight-line frame, the only motorcycle frame made with drop forged fittings throughout.

¶ Speed: Six to Sixty miles per hour, as long and as far as you like.

¶ **Price, complete, $310.**

¶ Write for Catalog A-11.

Excelsior Motor & Mfg. Company

Randolph Street Bridge, Chicago, Ill.

KARR PORTABLE GARAGES

The Karr Portable House Co., of 2554 Driving Park Blvd., Chicago, Ill., is putting on the market the Karr Portable Garage, a specimen of which we illustrate. This is made with a steel frame, gable roof of corrugated iron, painted on both sides with two coats of red or black mindura paint. The siding is No. 1 yellow pine, dressed, matched, and double beaded both sides. The garage is varnished inside, painted outside. The floor is of 2 inch No. 1 hemlock planks.

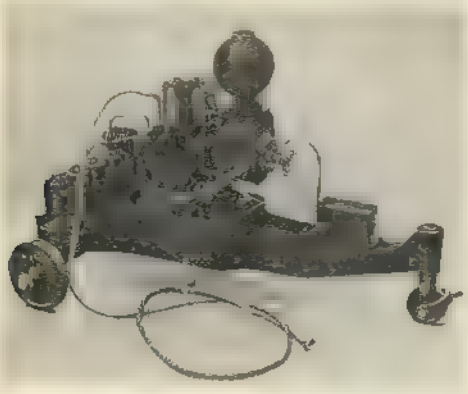
This house is substantial, wind and water tight, was erected in a few hours, and cost $160. Any size of garage is built by the Karr Co., and by reason of their knock-down feature, coupled with their strength and durability, with the low price, the Karr garage should be quite popular.

A 12 x 18 Carr Portable Garage.

A PORTABLE AIR COMPRESSOR

In designing the O B combination motor and compressor, made by the Aerocar Co., of Minneapolis, Minn., the main object in view was to get a machine that would deliver a large volume of air, give ample pressure and fill the demand for a simple, neat, compact and durable machine.

The motor is built on the highest improved lines used in automobile construction, delivers nearly two horse power and can inflate the largest tire in less than one minute. It



The O B Combination Air Compressor.

is water cooled and is perfectly mechanically balanced. Being mounted on a solid iron truck without any bolts, nuts and screws in its make-up, it can be rolled around very easily to any place. The compressor part has no ball or check valves in its construction, both inlet and outlet valves are bevel seated and ground to perfect fit. There is absolutely no dead space at end of compression stroke and therefore all air that enters into cylinder on intake stroke is forced to tire. The air is delivered through a shock absorbing device in a steady stream. This shock absorber is also so constructed that no oil can flow with the air and reach the tire.

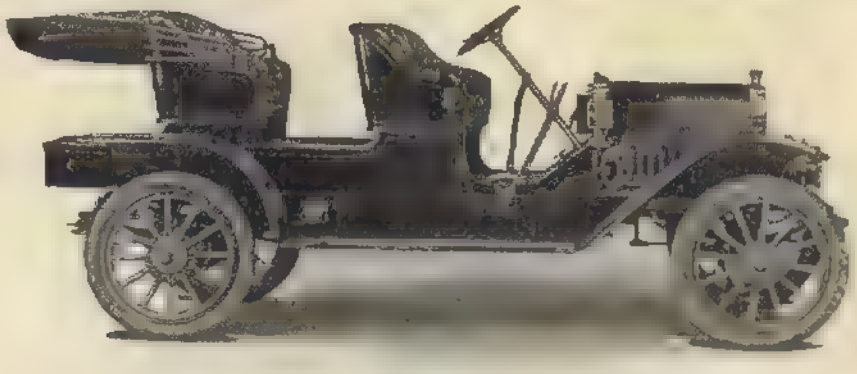
All parts are made with jigs, and are interchangeable. All bearings are made extra heavy, giving the motor a very steady action. The cylinders are all finished with special reamers giving them a very fine and smooth finish. The whole machine is built with the utmost care and all are well tested out. The motor is sold with or without the truck. Patents are now pending in all leading countries.

BOSTON DEALERS ORGANIZE

One of the first cities to complete an organization of its commercial motor truck dealers is Boston, where the Boston Motor Truck Association was formed recently. The objects of the association include the corrections of prevailing abuses and the controlling of contests and demonstrations. An exclusively motor truck show is planned. The officers of the association are: J. W. Maguire, president; A. P. Underhill, vice-president; J. S. Hathaway, treasurer; Chester I. Campbell, secretary; board of directors, the above officers and A. B. Henley, Victor A. Charles, L. B. Butler and C. F. Whitney.

The Washington Motor Car Co., of Oroville, Washington, has been formed to sell motor cars in eastern Washington and British Columbia. A repair shop will also be maintained.

GAYLORD



THE HIGH POWERED UTILITY

A STURDY CAR THAT IS BUILT FOR WORK
and
A WELL APPEARING CAR FOR TOURING

The GAYLORD UTILITY is powered with a four cylinder, long stroke, valves-in-head motor having a bore of 4 inches and a stroke of 5 inches. It is rated at 30–35 horse power, but is capable of delivering power considerably in excess of its rating.

¶ THE GAYLORD UTILITY is built primarily for service. Every dollar that goes into the making of a GAYLORD is expended to obtain serviceability. A powerful motor of a type approved by the most recent engineering practice a strong transmission, a large multiple disc clutch, a pressed steel channel frame stronger than will ever be required, are a few of the GAYLORD reliability features.

¶ All stresses have been accurately calculated. More than ample provision has been allowed for overloads and the calculations have been backed up by thousands of miles of testing over the rough sand roads of northern Michigan. Every vital and essential part of the GAYLORD—the parts that make for infallible reliability and long continued service are made right—are made far better and will stand more wear and will give more service with a smaller upkeep expense than any other car at anywhere near the GAYLORD price. This is possible because no money is wasted on numerous curves, colored leather upholstering, looking glass finishes and other so-called "refinements." Again, service is the keynote. The GAYLORD bodies are made of thoroughly seasoned first-grade lumber. They are well ironed and will stand any reasonable amount of hard usage—but not a penny goes for furbelows.

¶ In the GAYLORD UTILITY you get 100 cents' worth of motor car service and reliability for every one of the $1,250 you pay for it.

¶ The rear seat, which carries the top, can be attached or detached in a moment.

Write for "Gaylord Plain Facts" and other GAYLORD literature.
Shall we place you on "Gaylord Plain Facts" mailing list?

GAYLORD MOTOR CAR CO.
GAYLORD, MICHIGAN

THE CHAINLESS TRUCK!

A SHAFT-DRIVE AND FULL FLOATING REAR AXLE MAKE THE GLEASON SUPREME AMONG LIGHT DELIVERY CARS!

¶ The Chain Drive is all O.K. on a 2 or 3-ton truck. But not so on a medium light-weight Commercial Car where **both** speed and efficiency are required. ¶ **GLEASON** Commercial Cars are made on one chassis only—a chassis that has stood the test of five long years without a single radical change. The **GLEASON** shaft-drive does away with the annoyance of cumbersome chains. The **GLEASON** Full Floating Rear Axle eliminates all rear axle trouble.

The GLEASON

Is a stylish and a practical Commercial Car. It is furnished with either closed or open body. Carrying capacity, 1000 pounds. A sturdy car and a substantial car. Yet a model of simplicity in construction. Made with an eye single to its thoroughness—its completeness. Pneumatic or cushion tires, as desired.

$1050 to $1400

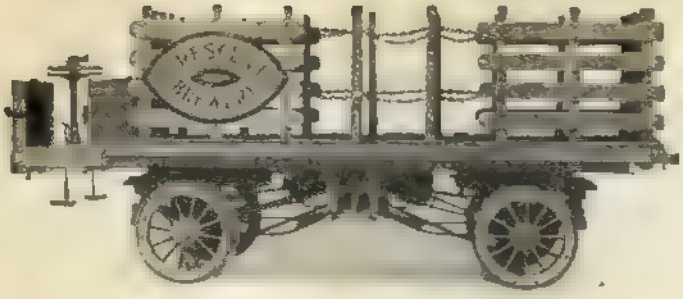
¶ Sliding gear transmission, with three speeds forward; multiple disc clutch with cork inserts and full floating rear axle.

¶ The **GLEASON** is famed for its economical upkeep. Its high-class construction leaves practically nothing to get out of order or go wrong. And its powerful engine enables it to go over any kind of road and in all kinds of weather.

¶ This car will stand the closest investigation—will make good under the severest test.

¶ May we supply you with full information? Will you kindly write or wire us to-day? We want red-blooded agents in all unoccupied territory.

K. C. Vehicle Co., Manufacturers, Kansas City, Mo.



AMERICAN STANDARD TRUCKS

AGENTS:

NOW IS THE TIME
HERE IS THE TRUCK
IT IS NOW UP TO YOU

The Commercial Truck Revolutionized

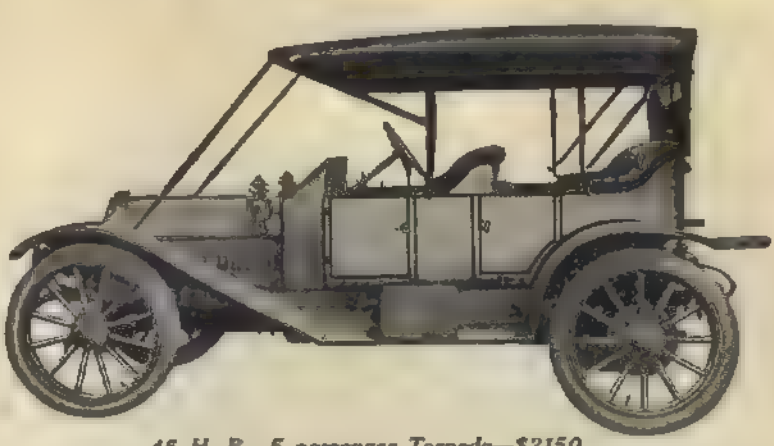
¶ Power on all four wheels. ¶ Fifty per cent. saving on tires. ¶ Load carried over all four wheels. ¶ Turns in half the space required by others.

Write for Agents :: *Big Money-Making Proposition*

American Motor Truck Company
OF MICHIGAN
General Offices: 1016-1017 Ford Bldg., Detroit

PRICES:

One Ton,	$1400.00
Two Ton,	1900.00
Three Ton,	2700.00
Five Ton,	3500.00
Ten Ton,	6000.00



45 H. P.—5-passenger Torpedo—$2150

The Glide Line for 1911

45 H. P. Cars——————$2000

sets an absolutely new standard of automobile value.

Glide Cars have now reached a stage of development where they can be manufactured and sold on the same basis as any other staple commodity. In this they are three years ahead of other makes, and for this reason 1911 Glide prices are three years ahead. They represent the lowest possible price consistent with the manufacture of a strictly high-grade, dependable machine of "the high-powered class."

We are content with a fair manufacturing profit on Glide Cars. Such a profit as is obtained in other lines of manufacture. Our expense for dies for drop-forging and pressed-steel parts have been absorbed.

Our output has increased. A new factory equipped with every device for cutting manufacturing cost to a minimum has been built. These factors and a determination to make the Glide the most economical investment possible in the purchase of a permanently satisfactory car are responsible for the new Glide prices.

The 1911 Glide line consists of

Six Splendid Cars

4¾x5 motor developing 45 H. P. in all models.

Special "45," 7-passenger Touring Car,	**36x4½**	**tires**	**$2000**
Special "45," 5-passenger Touring Car,	**36x4**	**tires**	**$2000**
Special "45," Roadster	**36x4**	**tires**	**$2000**
5-passenger Torpedo	**36x4½**	**tires**	**$2150**
Scout	**40x4**	**tires**	**$2000**
Commercial Delivery Wagon	**36x4½**	**tires**	**$2000**

To purchasers and dealers it offers a wonderful opportunity. Our advance announcements giving specifications and telling "How we proved every claim we make—In the recent Glidden Tour" will be mailed on request. Write for it today. Address

The Bartholomew Co.

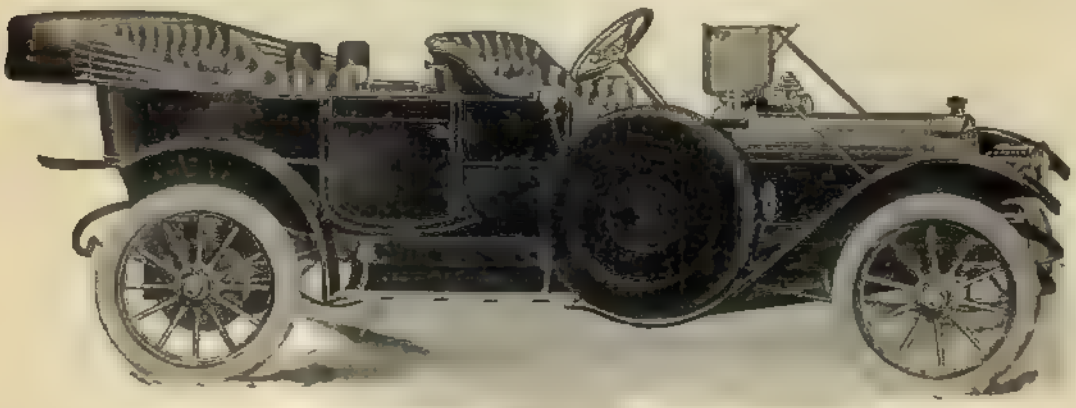
210 Glide St. **Licensed under Selden Patent** ***Peoria, Ill., U. S. A.***

TRADE MARK

CLUB CAR CO. OF AMERICA

WE COURT COMPARISONS

Send for Catalogue containing full description of Specifications and Equipment.



THE "CLUB" TOURING CAR
Four-cylinder, 40-50 Horse Power, 7-Passenger Touring Car
Price, $3,000 complete, f. o. b. factory

More Intrinsic Value than has ever before been offered to the Purchasing Public in the way of a HIGH-GRADE COMPLETELY EQUIPPED Automobile.

Pleasure Car Types

7-Passenger Touring Car, $3,000

Limousine, $3,750 **Landaulette, $3,750**

Torpedo, $2,900 **Runabout, $2,800**

Commercial Cars

3-Ton Truck, $3,000 **Taxi Cab, $2,500**

Write for Catalogue

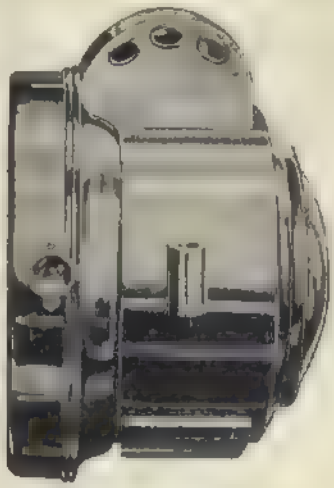
CLUB CAR COMPANY OF AMERICA

METROPOLITAN TOWER, NEW YORK

GRAY & DAVIS

GRAY & DAVIS CLOSE-COUPLED LAMP

STYLES FOR 1911



Quality First Last and Always

Design Patent Applied for
Styles Nos. 106, 107, 108

GRAY & DAVIS OIL SIDE LAMP

No. 104

Shown with Electric attachment "C"
Size body . . 4¼ in. x 4¼ in.
Price, each . . . $5.50
With Electric attachment "C" extra $1.50
Our latest type tubular cold blast oil lamp, suitable for large or medium size cars

GRAY & DAVIS OIL SIDE LAMP

No. 103

Size body . . 4¼ in. x 4¼ in.
Price, each $4.50
Our new small square lamp, a little beauty and suitable for medium and small cars.

GRAY & DAVIS TUBULAR OIL TAIL LAMP

Style No. 15

For use on medium size cars
Price, each $3.25
Diameter of Flange . 4½ in.
Extreme Length . . 7 in.
Extreme Height . . 9½ in.
Our most popular tail lamp

New catalog ready showing complete line. Send for it

GRAY & DAVIS, AMESBURY MASSACHUSETTS

"The Two Wizards"

THOMAS A. EDISON

Inventor of the Famous Edison Battery

—AND—

EMIL GRUENFELDT

Designer of the Baker Electric

The Baker is the first electric car to accomplish the double century on one charge of batteries.

244.5 Miles Made by the Baker on a Single Charge

This mileage record for electrics was recently made by a Stock Baker Victoria with standard equipment of Edison batteries. The distance covered was 244.5 miles over **average roads** at a speed of 12.65 miles per hour under official observation.

The Baker Goes Farther

than any other electric simply because its motor develops more power with the same "draw" and its shaft drive delivers that power to the rear axle with less friction than any chain drive invented. No other shaft drive can approach the Baker transmission in saving of power when the car starts, quickens speed or climbs a hill.

Live Dealers Wanted Wherever the Baker is Not Now Represented.
For Dealer Proposition, address

THE BAKER MOTOR VEHICLE COMPANY

Largest and Oldest Manufacturers of Electric Vehicles in the World

35 West Eightieth Street, - Cleveland, Ohio

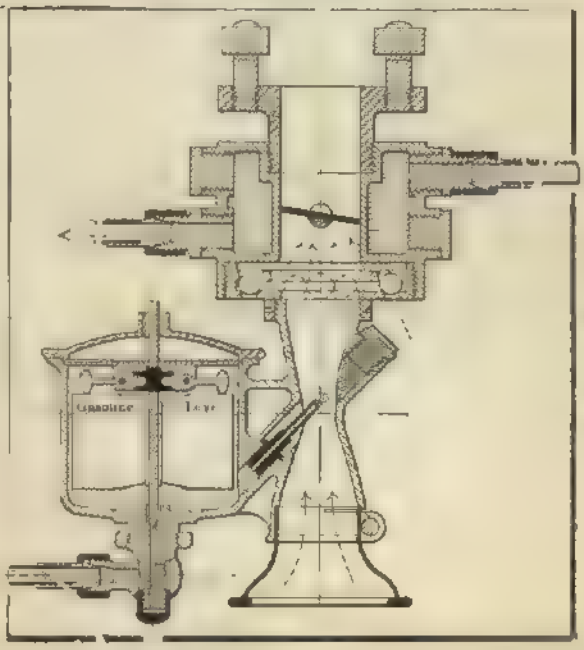
POWER WHEN YOU NEED IT

is combined with economy and flexibility in the

POSITIVE AUTOMATIC

CARBURETTOR

G. & A.



Note the simple automatic features, also straight line entrance of mixture.

Money refunded if not satisfactory after 30-day trial.

A. J. MYERS, Inc., Sole Owners U. S. Patent Rights
244 W. 49th Street, New York

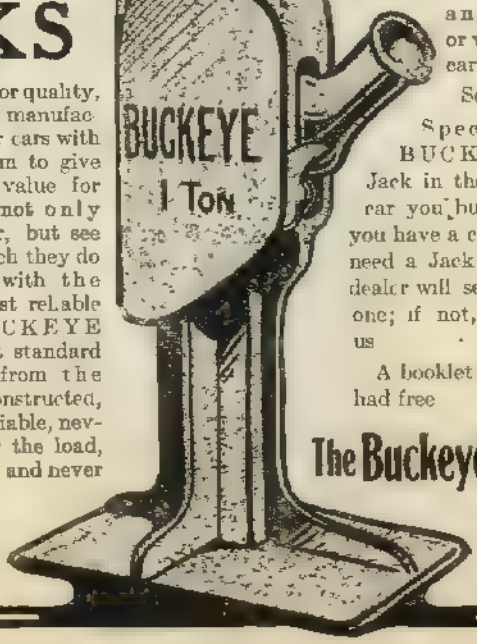
All persons are cautioned against infringing on the ball cage for the intake of auxiliary air.

BUCKEYE JACKS

IN ALL SIZES

BUCKEYE JACKS

is a synonym of superior quality, therefore automobile manufacturers who equip their cars with BUCKEYE Jacks aim to give you the very most value for your money, as they not only market a good car, but see that the good car which they do market is equipped with the highest grade and most reliable tools to be had. BUCKEYE Jacks are the highest standard of excellence, made from the best materials, best constructed, in every case most reliable, never break down under the load, quick acting, positive and never out of order when you most need this important tool.



They are made by reliable manufacturers, in a large variety, suitable for any size or weight car.

See list.

Specify a BUCKEYE Jack in the next car you buy. If you have a car and need a Jack your dealer will sell you one; if not, write us

A booklet can be had free

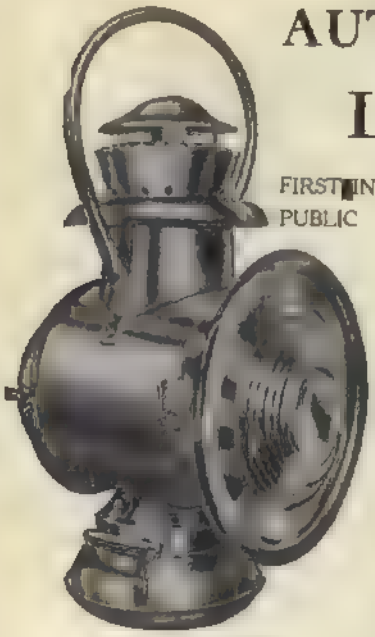
	Capac.	Hght. Bar down	Rase of Bar	Hght. Bar up	Weight	Size of Base	List Price
No. 0	1 ton	12"	6"	18"	6 lbs.	3½x3½	$3.00
No. 00	1 ton	13"	6"	19"	8 lbs.	3½x3½	3.50
No. 01	1 ton	13"	6"	19"	9 lbs.	3½x3½	4.00
No. 02	1 ton	13"	6"	19"	10 lbs.	3½x3½	4.50
No. 03	1 ton	13"	6"	19"	11 lbs.	3½x3½	5.00
No. 04	1800 lbs.	13"	6"	19"	12 lbs.	3½x3½	5.50
	1 ton	10"	7½"	18"	84 lbs.	3 x3½	4.83

The Buckeye Jack Mfg. Co.

ALLIANCE
OHIO

HAM'S "COLD BLAST"

AUTOMOBILE LAMPS



HAM'S TOURIST

FIRST IN THE LIME-LIGHT OF PUBLIC FAVOR SHINES THE

HAM-LIGHT

Represents the maximum of lighting service and beauty with the minimum of trouble.

Will burn oil, gas

electricity.

HAM'S COUPE

There is an immense satisfaction in having a lamp that stays lit. Of course, lamps do blow out,—but they are not

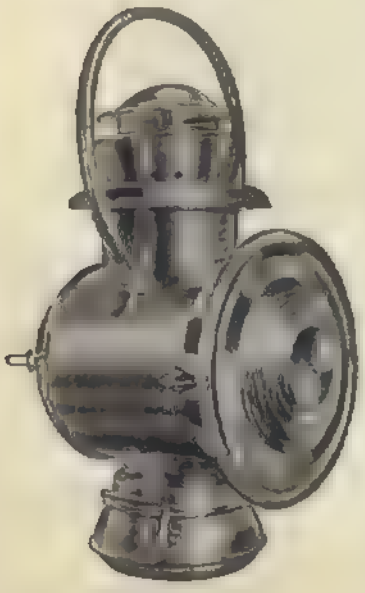
HAM LAMPS

The superior construction, close attention to detail, peerless workmanship and finish, coupled with elegance of design, place our product far in advance of competitors.

For 1911 order HAM LAMPS, and enjoy that indescribable feeling of confidence that only HAM EQUIPMENT can bring.

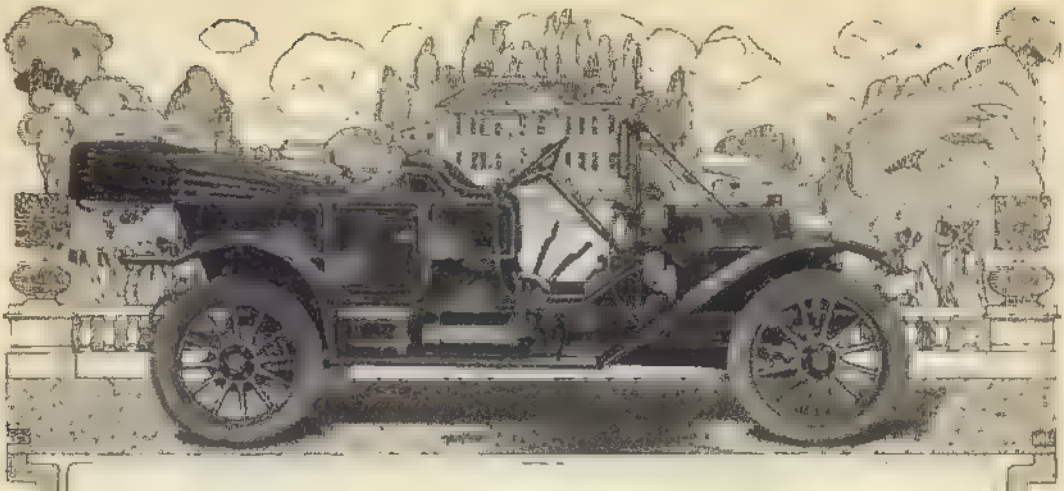
Catalog on request

C. T. Ham Mfg. Co.
Rochester, N. Y.



HAM'S METEOR

HAM'S VENUS
Tail Lamp



The Supremacy of the

HAYNES

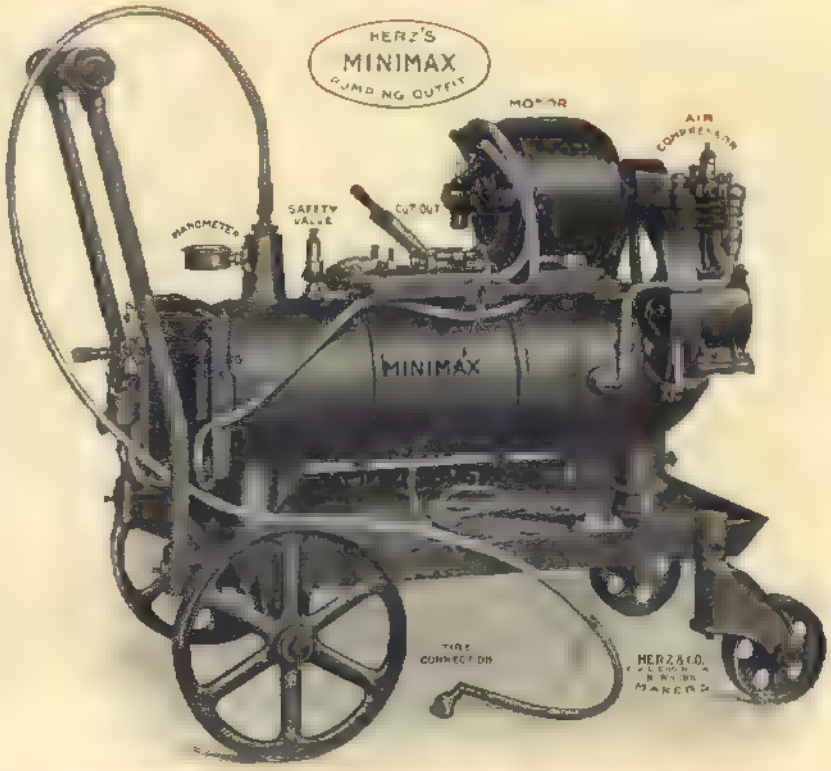
is the natural outgrowth of seventeen years devoted exclusively to the manufacture of superior-grade cars

HAYNES AUTOMOBILE CO.

Station G

KOKOMO **INDIANA**

HERZ'S GARAGE PUMP



It does away with those expensive to install and more expensive to run stationary pipe lines

For even the Maximax costs practically nothing. Made for this kind of Service!

Just Wheel It Where It's Needed and Connect! Nearest Lamp Socket!
The Tank Will Hold Enough Air to Inflate Four Tires Outside of the Garage

150 Pounds in Three Minutes

BE MODERN! SAVE MONEY! SAVE TIME!

Write Us Now. See Us at New York or Chicago Show

HERZ & CO., Civil Engineers **Puck Building, New York**

Herz Plug

"BOUGIE MERCEDES"

Herz Plug is the only one positively guaranteed for one year. As a matter of fact, it will **stand up,** under any and all conditions, from twice to three times that long. It's Double Stone.

It is not affected by oil or soot, requires no [illegible] and need never be taken out of the motor. It has two to four electrodes of Platinum-Alloy, which take care of any voltage, from the lowest to the highest magneto tension and which will not burn away.

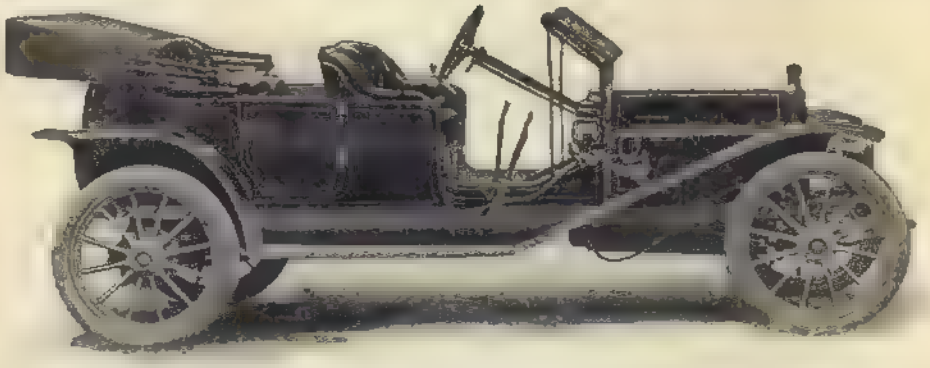
Since 1904, Herz Plug has been acknowledged to be the best plug made in either Europe or America.

Herz Magneto can be relied upon, day in day out, for a fat, hot spark. With the Herz Plugs it forms a perfect ignition system. It is made in every size and style to meet every requirement, from that of the highest powered automobile to that of the smallest motorcycle. Made in Germany.

HERZ & CO., 295 Lafayette St., New York

Herz Magneto

It's here—in first cost and after cost, the most economical car in the world



20 H. P.—4 cylinders 4 passenger—sliding gears—Bosch magneto—110 in. wheelbase

Price, F. O. B. Detroit, including gas lamps, piping and generator, 31 x 3½ in. rear tires, shock absorbers in front; three oil lamps, tools and horn as regular equipment. Top, windshield and speedometer extra.

$900 Touring Car — **Hupmobile** — **$900 Touring Car**

GUARANTEED FOR LIFE

Are you one of those who have felt that a touring car was beyond their means? Hundreds like you now find themselves eligible to ownership of the new $900 Hupmobile. In first cost and in assured economy of operation, it makes a touring car possible to scores who have not dared consider one before.

The new Hupmobile banishes three bugaboos which have always confronted the touring car buyer

(1) The fear that a low price meant poor construction.
(2) The fear of frequent repair.
(3) The fear of a high cost of upkeep.

Fear No. 1 is driven away by the life-long guarantee—and the magnificent record of thousands of Hupmobiles.

Fear No. 2 is left "without a leg to stand on" by this same life-long guarantee.

Fear No. 3 meets its Waterloo in the proof presented by hundreds of owners that in view of the service rendered, a Hupmobile, cared for at home, is cheaper than street cars or horses.

So you are confronted with an entirely new economic proposition.

If a touring car would make life brighter and healthier and happier—

And you can afford to pay for that inestimable boon a first cost of $900, and an after cost about equal to the average family street car expense, then buy a Hupmobile with implicit confidence in its rock ribbed life-long guarantee.

Buy it, too, with this thought in mind

That the Hupmobile policy has always been to carry out every promise to the letter.

Hupp Motor Car Company

Licensed under Selden Patent

DETROIT Dept. A MICHIGAN

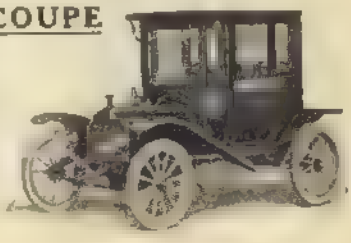
All models shown at Madison Square Garden, New York, January 7-14.

HUPMOBILE RUNABOUT

Runabout, $750—F. O. B. Detroit, including oil lamps, tools and horn. Top, windshield, gas lamps, tank or generator, speedometer and trunk rack extra.

HUPMOBILE COUPE

Coupe, $1150.—F. O. B. Detroit. Equipment includes electric headlights, combination oil and electric dash and tail lamps, batteries and wiring; folding seat for third person; shock absorbers in front; 31 x 3½ inch rear tires.



Jackson

UNIT POWER PLANTS
KEEP OIL IN AND DIRT OUT

A Complete Line for 1911

Model 51, $2200—5-passenger Touring Car with provision for two extra seats. Motor 4½ x 4½. 120-inch wheel base. Wheels 36 x 4. Also furnished as a four-passenger Tourabout.

Model 41, $1700—5-passenger Touring Car. Motor 4½ x 4½. 110-inch wheel base. Wheels 34 x 4. Also furnished as a four-passenger Tourabout.

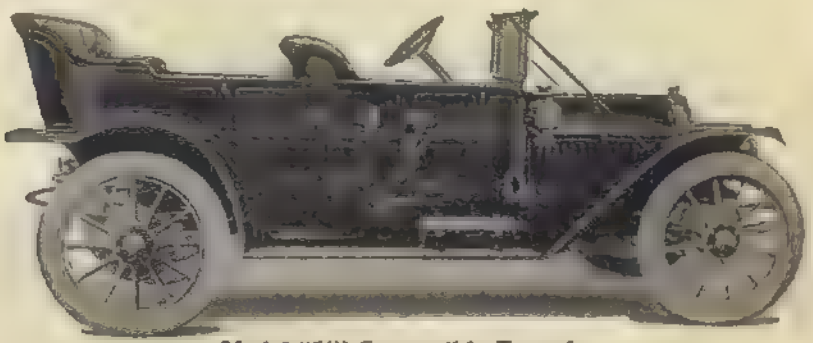
Model 38, $1650—Full Torpedo—left hand drive—center control. Motor 4½ x 4½. 115-inch wheel base. Wheels 34 x 4.

Model 35, $1250—5-passenger Touring Car. Motor 4 x 4. 105-inch wheel base. Wheels 32 x 3½.

Model 30, $1250—5-passenger Touring Car. Motor 4 x 4. 105-inch wheel base. Wheels 32 x 3½.

Model 25, $1100—2-passenger Roadster—Gasoline tank at rear. Motor 3¾ x 4½. 105-inch wheel base. Wheels 32 x 3½.

Convertible Torpedo—Models "51" and "41" will be fitted with removable front doors and panels at an extra charge of $50, and Models "35" and "30" at an extra charge of $40.



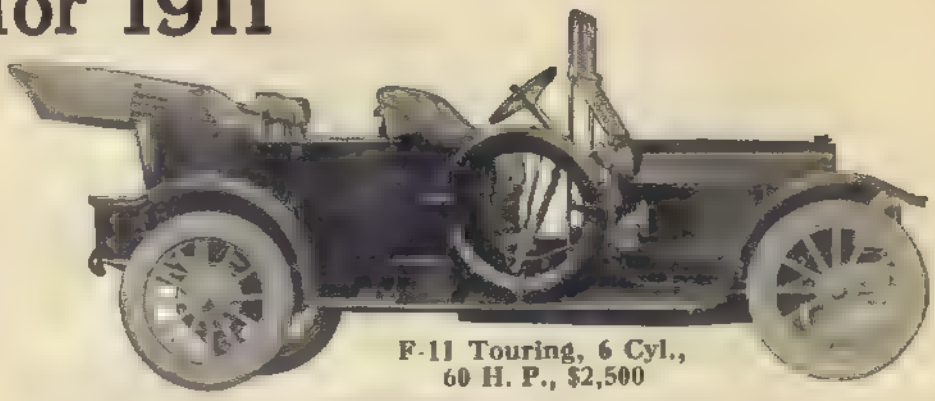
Model "51" Convertible Torpedo

Jackson Automobile Company

Jackson, Michigan **Licensed under Selden Patent**

Write for Catalog "A"

The Sensational Value for 1911



F-11 Touring, 6 Cyl., 60 H. P., $2,500

6 CYL.

60 H.P.

$2500

Never before has a "Six" of equal H. P. sold at so reasonable a price. It anticipates the time when there will be a readjustment in the prices of high-powered Sixes—when manufacturers will be satisfied with smaller profits.

In every detail of construction, appointment and finish the Kissel Kar equals and surpasses four and six cylinder cars selling at more than $3,000

For instance—this car has 132 inch wheel base, which is from 7 to 10 inches more than the wheel base of many of the fancy priced cars, making it a roomier, easier riding car.

It has selective type, ball bearing transmission, four speeds forward and reverse, direct drive on third speed geared up 25% on fourth

The continuous power impulse of the six cylinders, the big wheel base and special ¾ elliptic springs give smoothness in running and comfort in riding not surpassed by any other car. The symmetry of design and finish [illegible] appearance.

Model L D-11, the four cyl. 30 H. P., four and five passenger, $1,500.

Model D-11, the four cyl. 50 H. P., four and five passenger $2,000.

KISSEL KAR 3-TON TRUCK, $3,500

WRITE FOR KISSEL KAR CATALOG

KISSEL MOTOR CAR CO., 120 Kissel Ave., Hartford, Wis.

KISSEL KAR

Licensed under Selden Patent

SEE OUR EXHIBITS AT THE NEW YORK AND CHICAGO SHOWS

MERCER

$2250

Won Second

at

Savannah

A privately owned MERCER Raceabout, owned and driven by Mr. Washington A. Roebling, 2d, an amateur, without any factory assistance, won second place in the International Light Car Race, for the Savannah Challenge Trophy.

Mr. Roebling was but eight minutes behind the winner at the end of the 277 miles, and in the last lap was delayed twelve minutes by colliding with a palmetto tree, wrecking his control levers.

The MERCER averaged 61 miles per hour for the whole distance.

We are making our 1911 *allotment now, and a few live licensed dealers will be taken up. We would suggest that you lose no time in writing.*

MERCER AUTOMOBILE CO.

TRENTON, N. J.

LICENSED UNDER SELDEN PATENT

SHEET ALUMINUM FOR AEROPLANE COVERING

Will you kindly advise me, through columns of your valuable paper, if and why aviators experience any troubles by using sheet aluminum for aeroplane covering.

Thanking you for your kind information, I am, yours respectfully.

WILMINGTON, DEL. ERNEST NOWAK.

Thus far none of the well-known machines have used sheet aluminum for an aeroplane covering. There seems to be no reason why this cannot be done except the fact that it would add considerable weight, and most of the constructors thus far have had difficulty in keeping down the weight. In all probability some of the machines of the future will have sheet metal coverings for the wing surfaces.—Ed.

RIBS SHOULD BE COVERED ON BOTH SIDES

Would be glad to receive a reply to the following questions in the January number of the Trade Journal, Aerial Department.

Why is it that in all aeroplanes the covering is stretched on the top surface? It seems to me it would be desirable to have the under side smooth as it supports the weight, the ribs, etc. being on the top side as they actually would not hinder the progress of the machine as the air on top is bearing no weight.

What causes a bird to progress through the air when it works its wings? This seems a simple question, but I have heard a number of answers, and I desire to know which is right.

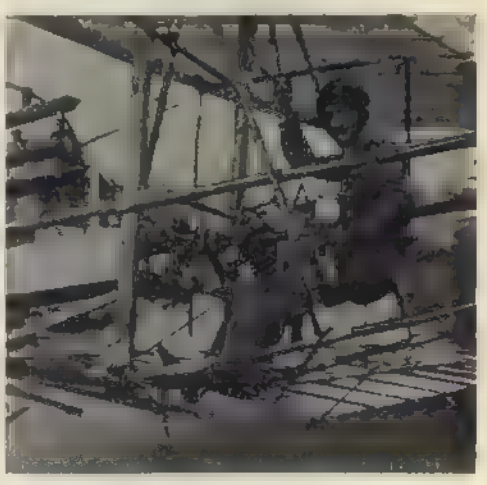
STATEN ISLAND, N. Y. HARRY LAWRENCE

You are incorrect in stating that the covering in all aeroplanes is stretched on the top surface of the frame. Some of the earlier machines were so constructed. In the Curtiss, the fabric was laced through holes in the middle of the ribs, but in the later machines, and one might say the best machines that are now made, the fabric is stretched on both the upper and under surfaces. If only one side is to be covered you are undoubtedly correct in supposing that this should be the under side.

The forward motion of a bird is caused by a partial backward thrust of the air due to the peculiar elliptical movement of the wings. There is a downward and backward thrust. The forward motion feathering, as it were, so as to pass to the forward position again without offering any more resistance than is necessary.—Ed

LEGAGNEUX REACHES 10,499 FEET

The progress of aviation has been so remarkable in the six months since the meet at Atlantic City, when Brookins reached an altitude of 6,175 feet, that each month we have recorded in these columns one or more new altitude records. No one, however, had reached 10,000 feet, even though a prize of $10,000 was offered during the International Meet.



Legagneux, the first man to reach an altiture of 10,000 feet in a heavier than air machine.

However, that mark has at last been reached and passed, Legagneux, in a Bleriot reaching a height of 10,499 feet at Pau, France, on December 9. After reaching that remarkable altitude, he glided down dexterously, in quick time, in spite of the fact that he was numb with the cold.

Metz-Air-Car

BLERIOT TYPE
EVERYBODY MAY FLY

Aeroplanes, complete or in the knock-down. Motors 30, 60 and 120 H. P., propellers and all component parts.

Manufacturers of Metz Runabouts—lightest and most economical automobile in the world.

We want live progressive dealers everywhere.

METZ COMPANY

Waltham, Mass.

MOBILOIL

the oil that lubricates most

VACUUM OIL COMPANY
ROCHESTER U.S.A.

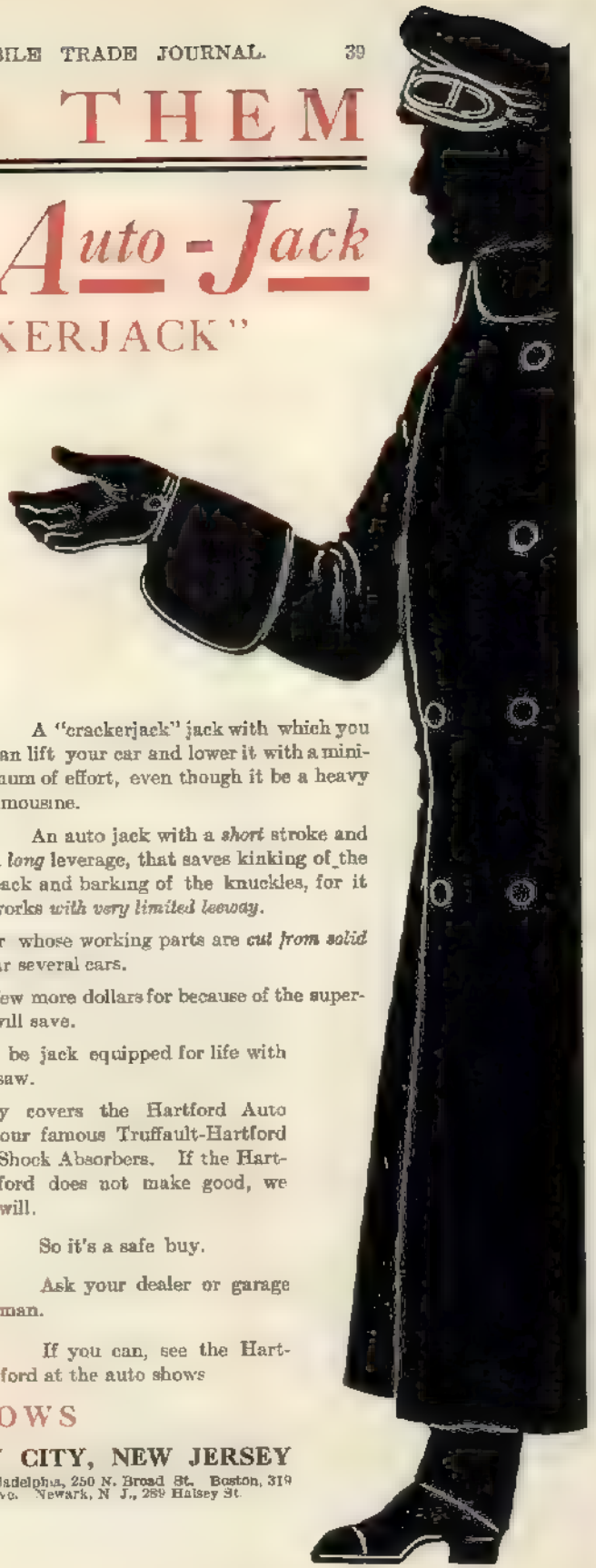
NEEDS THEM

Hartford Auto-Jack

"A CRACKERJACK"

The Hartford Auto Jack

(Pat. Pending)



A "crackerjack" jack with which you can lift your car and lower it with a minimum of effort, even though it be a heavy limousine.

An auto jack with a *short* stroke and a *long* leverage, that saves kinking of the back and barking of the knuckles, for it works *with very limited leeway*.

In fine, the jack you've waited for whose working parts are *cut from solid steel* (not cast) and which will outwear several cars.

A jack you will be glad to pay a few more dollars for because of the superior service it will render, the labor it will save.

If you buy a Hartford *now*, you'll be jack equipped for life with the dandiest little auto tool you ever saw.

Our satisfaction-guaranteed-policy covers the Hartford Auto Jack as comprehensively as it does our famous Truffault-Hartford Shock Absorbers. If the Hartford does not make good, we will.

So it's a safe buy.

Ask your dealer or garage man.

If you can, see the Hartford at the auto shows

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THE
HARTFORD JACK
AT
THE SHOWS

AND BOSTON SHOWS

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READ ABOUT IT

AT THE **New York—** AND **Chicago Shows**

We Will Exhibit

Three Models of the 1911

Moline

Four-Passenger Fore Door, $1700
Five-Passenger Touring Type, $1650
Four-Passenger Toy Tonneau, $1600

Come and let us point out to you the several *superior features* of the 1911 Moline. Inspect its 4 x 6

Long Stroke Motor

which enabled the Moline not only to win the Chicago Trophy in the 1910 Glidden Run and *outpoint* every car entered regardless of division, size, horse power or price, but to win every reliability run entered. The last victory was the Team Trophy of the 1000-Mile Chicago Run in which 2 Molines made perfect road scores; perfect technical scores; perfect tire scores. 1911 Catalog No. 37 free on request.

TO GOOD LIVE DEALERS: - Our increased production enables us to take on a few more good dealers. Write for territory and terms.

Touring Type Toy Tonneau

Moline Automobile Co., 37 Keokuk St., E. Moline, Ill.

MONITOR

It Carries The Loads

No creaking, straining nor fussing—just a strong, steady pull. You have unlimited power at your finger's ends, and you *feel* it. No fuel is wasted. Our direct shaft drive from power plant to rear axle not only eliminates broken chains, flying grease and loud noise, but transmits 90% efficiency. All wearing parts are of best quality white metal and phosphor bronze—the best wear resisters known today. The picture gives a good idea of the solid worth Monitor users get out of their cars.

Perfect Score, N. Y. Reliability Run

awarded Oct. 28–29. Also on same dates, a clean score for time and perfect mechanical construction was given the Monitor in the Chicago American run, when it covered the 211 miles ahead of schedule time, with no broken parts, carrying a 25% overload.

At Chicago Auto Show, Feb. 6 to 11, 1911

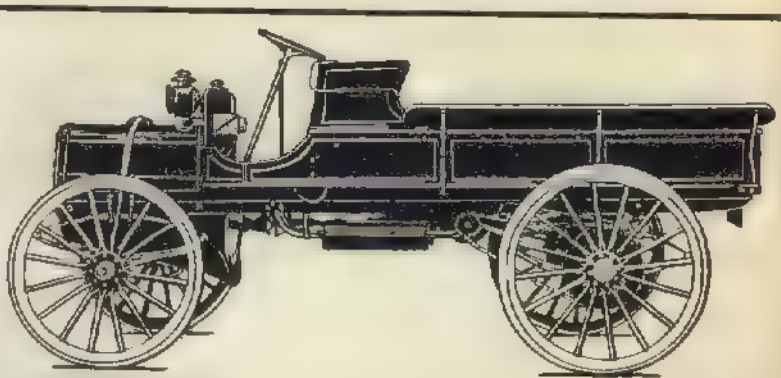
visit Section "N," main floor of Coliseum and see the latest Monitors meet our people and get acquainted. There's a Monitor for every business, 1500 to 3000 capacity, $1400.00 and up. New bus just added. *Write to home office for information.*

MONITOR AUTOMOBILE WORKS
200 N. Academy Street - - Janesville, Wis.

"Designed Right, Built Right, Priced Right"

Chase Motor Wagons

Selected by the BIG ONES WHO KNOW



The Chase System of Air Cooling

It is easy to sell a Motor Wagon, fairly easy to get a testimonial letter from the user, but repeat orders absolutely prove efficiency and economy.

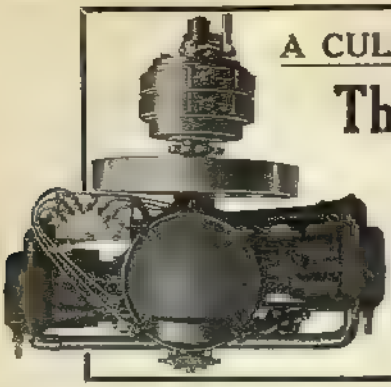
The Rockwell Transportation Company, of New York City, have ordered Chase Wagons as follows:

November 18, 1909	1	September 22, 1910	5
December 20, 1909	3	September 30, 1910	3
March 11, 1910	2	October 18, 1910	1
October 20, 1910	2		

Practically every firm that ever ordered one or more Chase Wagons as a trial has either ordered more or signified its intention of doing so.

If you want to solve your delivery problems, send for our free Catalogue.

CHASE MOTOR TRUCK COMPANY Dept. C **SYRACUSE, N. Y.**



A CULMINATING TRIUMPH

The ANDERSON MOTOR

If you've found difficulty in securing a suitable motor for your truck,—don't waste money experimenting with various kinds in your endeavor to get satisfaction, but get an ANDERSON, and you'll bless the day you bought one

COMPACT POWERFUL LIGHT ACCESSIBLE SMOOTH-RUNNING

May we send further particulars?

C. ANDERSON MOTOR COMPANY

16th & Jackson Sts., :: :: Anderson, Indiana

Model C-2—Capacity 1 Ton

THE

STRENUOUS RANDOLPH

A live proposition from every point of view. Built in capacities ranging from 1000 lbs. to 5 tons.

Applications for Agencies in unassigned territory considered

RANDOLPH MOTOR CAR CO.

175 E. RANDOLPH ST., CHICAGO, U. S. A.

DEALERS WANTED

TO SELL

"The Car That Saves Money"

The commercial car is the future money-maker. Unlimited field, quick sales, good profits. The delivery car of durability, dependability, and reliability is the

SULLIVAN

Always ready—never quits. Strong, costs little to run; capacity, 800 pounds. Three styles bodies, 16 H. P. motor, 2 cylinders, 4 cycle, unit power plant. Visit our factory—let us prove everything. Write for catalog and terms. Prompt delivery of demonstrating cars.

SULLIVAN MOTOR CAR CO.

620 East Avenue ROCHESTER, N. Y.

Van Dyke

$850

INCREASED DELIVERY EFFICIENCY

The VAN DYKE Truck will give YOU sure, reliable delivery service and decrease your delivery expenses.

The VAN DYKE maintenance plan guarantees efficient delivery service. This guarantee is for FIVE YEARS, and will keep your truck continuously in commission.

Write

The Van Dyke Motor Car Co.

14 LEAVITT STREET

DETROIT - - - - MICHIGAN

THE VAN DYKE PLAN OFFERS BIG OPPORTUNITIES TO AGENTS

Price, $385

Guaranteed for One Year

MOTORETTE

Highest development of the motorcycle.

Not a cheapening of the automobile.

Yet—

The Motorette is as reliable, as well built, and as efficient as any high-priced motor car—

Except for excessive speed, it is as capable.

With it is achieved, more than ever before, the ultimate aim of all practical motor car builders—

Low cost of maintenance and operation.

MR. DEALER.

We want dealers. We want alert, aggressive, clean-cut young men. Men who are qualified to handle sales for this car. Its maximum speed is 25 miles an hour — 10 H P actual—but as a hill-climber it is a wonder. It has run 19 miles on a half gallon of gasoline — we guarantee it to do 25 miles per gallon. There are two heavy motorcycle tires in front and one three-inch automobile tire on the driving-wheel.

Look for our exhibit at the New York Automobile Show in Grand Central Palace, December 31st to January 7th. If you don't go to the Show, communicate with us at once. There is choice territory open. Get in your application to-day.

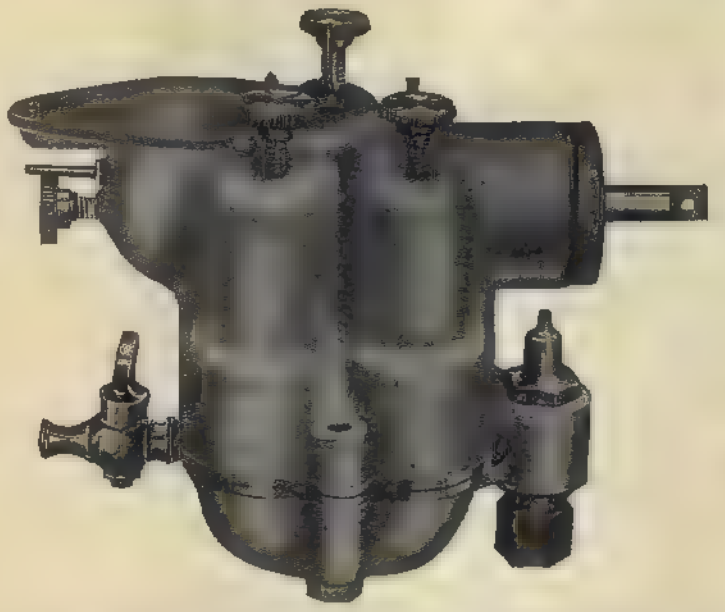
SEND FOR CATALOGUE C

C. W. KELSEY MFG. CO.

190 MORGAN STREET, HARTFORD, CONN., U. S. A.

MANY CARBURETORS IN ONE

MULTIPLE JET CARBURETOR



This model is equal to a cluster of three carburetors:

One Set for Low Speed

One Set for Medium Speed

One Set for High Speed

"Why didn't someone think of this before?" is a question often asked by enthusiastic users of the MULTIPLE JET CARBURETOR. We answer,—"Don't know," for it does seem odd that so important a feature of motor car development should have been but recently discovered.

The principle is simple and the result startling, for horse-power is greatly increased and fuel consumption minimized.

The principal features which make it different and better than other carburetors are the jets and air valves, which work in unison and produce a perfect mixture at all engine speeds and under all conditions.

JETS

These are so arranged that as the throttle is opened, first one and then another is brought into action as increased power is needed Each jet can be set in a few minutes by any motorist and does not require readjustment for atmospheric conditions. Single jet carburetors are required to cover too wide a range to render satisfaction now that only a low grade of gasoline is available.

SIZES AND PRICES

Horizontal Flanged Outlet, 1¼ in., Two Jet, Price, $15.00

Vertical Flanged Outlet, 1¼ in., Two Jet, Price, $15.00

Vertical Flanged Outlet, 1¼ in., Three Jet, Price, $20.00

Vertical Flanged Outlet, 1⅜ in., Four Jet, Price, $25.00

WRITE FOR BOOKLET

Multiple Jet Carburetor Company, Dayton, Ohio

SIMMS MAGNETOS

The new Simms Motor Starter should be on every Automobile. See it at the Show.

STARTS the motor from the dash without cranking. This system does away entirely with the high tension connections, switch and separate coil.

ALL the various types of Simms Magnetos for every kind of motor will be shown in full operation at the Madison Square Garden Show, New York.

THE up-to-date line of Simms Magneto accessories, Sparking Plugs, Magneto Covers and Spare Part Cases, Coils, Terminals and Switches, should also be inspected.

THE Simms Exhibit will be most instructive for everyone interested in ignition for automobiles and other purposes.

REMEMBER

New York Show, Madison Square Garden
New York, January 7-21, Stand 587
Chicago Show, January 28–February 11
Stand 127 and 21

SIMMS
QUALITY
EFFICIENCY RELIABILITY

THE SIMMS MAGNETO CO.

1780 Broadway, New York City

London Representative: Simms Magneto Co., Ltd.

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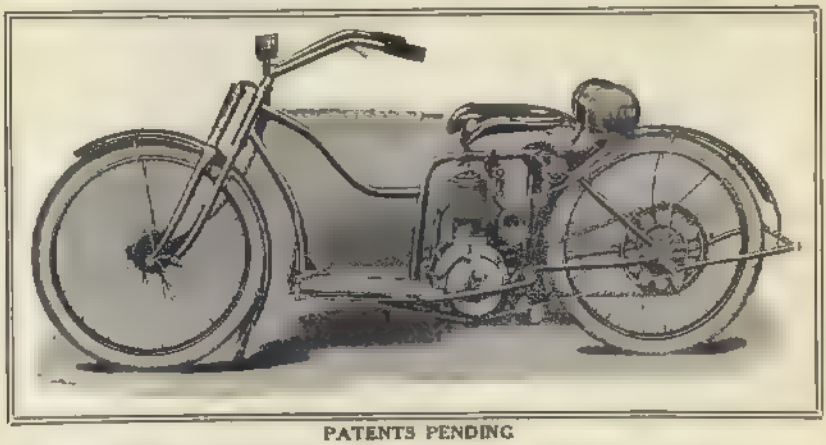
IT IS THE NEW ERA!

(A strong title that, but the machine does honor to the name.)

IT HAS A TWO SPEED TRANSMISSION
IT HAS A FREE MOTOR
IT HAS A BALL BEARING MOTOR
IT HAS A HAND CRANKED MOTOR
IT HAS A COMFY FORM SEAT—Not a Rail Fence
IT HAS A CUSHION FORK
IT HAS A FOOT-BOARD—NO PEDALS
IT HAS AN INTERNAL EXPANDING BRAKE
IT HAS A SIXTY-TWO INCH WHEEL BASE



PATENTS PENDING

The NEW ERA marks a new era indeed in Motorcycling.

It has been tried—it is no experiment.

It has been in the big ENDURANCE RUNS and IT HAS MADE GOOD.

In the hands of green riders it has been among the finishers in the big contests—it has climbed hills with a readiness that made the Old ERA-ITES gasp with amazement.

No saddle soreness to NEW ERA riders—no killing yourself to get started—no anything but EASE, and CERTAINTY, and COMFORT, and GET THERE.

THE *OLD* ERA IS DYING—LONG LIVE THE *NEW!*

Dealers and Riders Write for Advance Catalogue

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DISTRIBUTORS:

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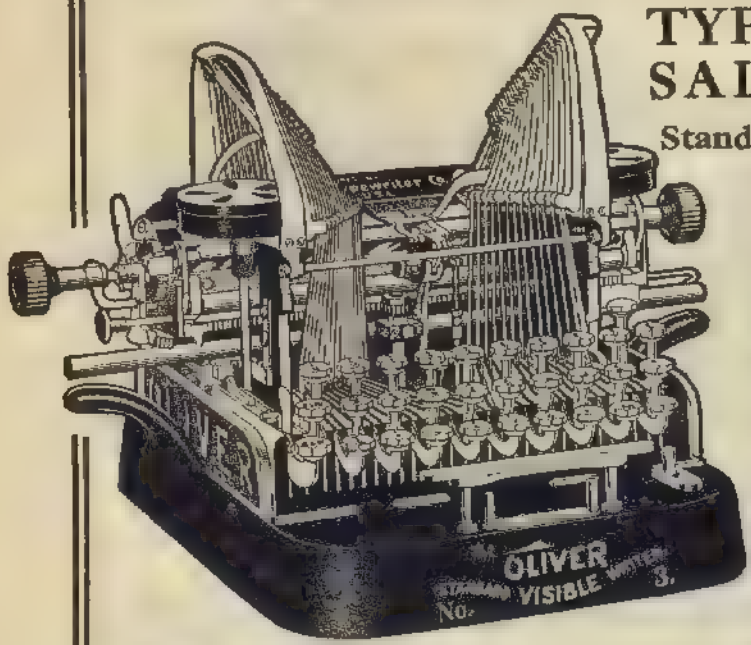
AN IMMENSE PRICE-SAVING TYPEWRITER SALE

Act NOW and Save $50 on this Standard Visible Writer



Original Model No. 3 Olivers for $50 on time—$5 after trial and $5 a month. No interest. Shipped on approval without deposit. Protected by standard guarantee.

These typewriters are flawless—the equal in EVERY respect of ANY typewriter, regardless of price. In no way damaged, shop-worn or inferior.

Visible Writing—Every letter is in plain sight as soon as printed—a necessity now.

Universal Keyboard—All standard typewriters have adopted the universal keyboard—you would waste time learning any other. The Oliver has 84 characters.

Quality of the Work—The beautiful work turned out on this splendid typewriter will give your letters distinction the quality of the typewriting has a marked effect upon the success of a letter. The U-shaped typebar and wide, smooth bearings insure perfect alignment while the one-piece escapement mechanism gives a perfect spacing between the letters. The type are exceedingly hard; they make a clear, clean-cut impression

Carbon-Paper Copies—An excellent manifolder because of the down stroke of the typebar—twenty copies, if you like. Cuts a perfect stencil for mimeograph work.

Ruled Lines—The simple variable-spacing device is instantly adjustable to write on ruled lines—draws horizontal or vertical lines with type and ribbon.

Writes in Colors—The Oliver originated the two-color writing—no change of ribbon necessary to write in any color.

Cards, Bills, Statements, Labels and all Memorandums written with ease and dispatch on this handy machine.

Easy to Operate—So simple any one can learn in a few minutes, elaborate instruction book sent with every machine.

Light Action—The down stroke of the typebar, with its scientific lever principle and wide, smooth bearings, gives the Oliver an action that is the lightest found on any typewriter. It is a pleasure to strike the keys.

Convenient—The ingenious arrangement of the working parts cannot be described adequately on paper, but will be fully appreciated by you when you use the machine

Will Last a Lifetime—Simplicity is the keynote of the Oliver construction. Less than one-third as many parts as the other machines. Will do a greater variety of work There is practically no wear-out to this sturdy typewriter.

Portable, Compact, Efficient—The lightest of all standard machines. Most of the weight is in the base, which reduces vibration and places the working parts in a compact, convenient position. It is always ready for business—always efficient. It will do any practical thing that any typewriter will do.

Complete—Metal case and baseboard, tools, instructions, etc., accompany each machine—nothing extra to buy.

Easy to Own—You can have one of these splendid typewriters for your own. Merely a few cents a day—$5.00 after you have tried the machine, and then $5.00 a month for nine months—only $50.00 in all—this is just half of the regular price and there is no interest to pay on the instalments You use the machine while paying for it. Think of it! the best typewriter that money can buy for only 17 cents a day for a few months.

Order it on Trial—You are welcome to use this splendid machine for five days without paying any deposit, or obligating yourself in any way, no salesman or agent will call upon you, and you will be the sole judge.

All you have to do is to send your shipping instructions on the attached coupon blank If you are not established in business just name a couple of references. All we want to know is that you are responsible.

A pencil will do to fill out the coupon. Mail it to-day.

Typewriters Distributing Syndicate

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Sign, cut out and mail

TRIAL ORDER COUPON

TYPEWRITERS DISTRIBUTING SYNDICATE,
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Gentlemen:—Ship me an Oliver Typewriter, Model No. 3, on approval

If entirely satisfactory, I agree to remit $5.00 within five days from date I receive machine and $5.00 each month thereafter for nine months, until the full purchase price of $50 is paid. Otherwise I will return the typewriter to you at your expense. It is understood that the title will remain in you until the purchase price is paid in full.

Name,

Address,

Via

References:

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THE MAXIMUS TIMER

(Note self-cleaning feature.) Admittedly the best timer yet brought out.

THE COPPERHEAD PLUG

(Best Dollar Plug.)

A 1911 product just coming through. Imported Porcelain. Extra high grade, finely made, handsomely finished and fully warranted. List, $1.00.

MAXIMUS GREASE GUN

Piston ring construction, with rings ground to perfect fit. A perfect tool. List, $4.00.

BLUE RIBBON EXHAUST HORN

A four-tone chime of the highest grade, solid brass, sixteen inches long and 2½ inches in diameter. Guaranteed not to shriek on high speed and to be perfect in tone, material and workmanship. Complete, with Butterfly exhaust valve and all-brass foot pedal. List, each, complete, $10.00.

CLOVERLEAF CLOCK

(For autos and motorcycles.)

Neat and attractive; well made, well finished and fully warranted. List, each, $3.50.

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Oldest and best known line of ampere and volt meters, wide range of styles and sizes, both pocket and switchboard types.

ELECTRIC LAMPS

High-grade headlights, sidelights and tail-lights in electric. High class and at low prices.

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A complete line of auto and machinists' tools. High-class assortment of auto tool rolls.

Manufacturer for Auto Jobber and Dealer

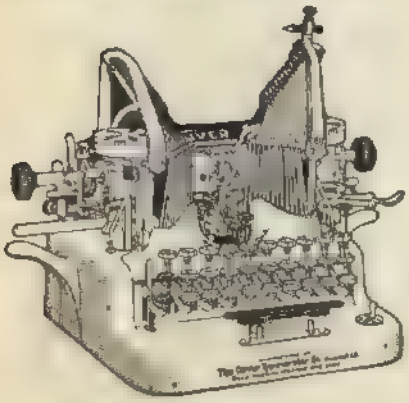
THE BECKLEY-RALSTON COMPANY

80-82-84 Michigan Avenue **CHICAGO**

17 Cents a Day

Buys an

OLIVER



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The OLIVER Typewriter

The Standard Visible Writer

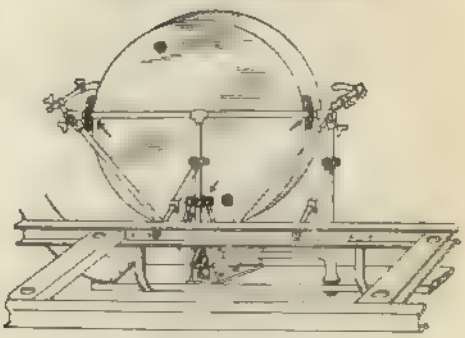
Can you spend 17 cents a day to better advantage than in the purchase of this wonderful machine?

Write for Special Easy Payment Proposition, or see the nearest Oliver Agent.

The Oliver Typewriter Co.

WALNUT AND TENTH STS., PHILA., PA.

Strapless Tire-Holder and Trunk



The latest device for carrying Trunk and Tires.

NO MORE STRAPS OR BUCKLES TO BOTHER WITH.

TIRES CAN BE REMOVED IN FIVE SECONDS, WITHOUT REMOVING THE TRUNK.

THE HOLDER is made of steel tubing; the castings, extensions and arms of solid brass, highly polished.

The TRUNK is made of sheet steel, finely japanned, and has two ventilators, permitting free circulation of air through the Trunk.

Guaranteed for two years. Absolutely water- and dust-proof.

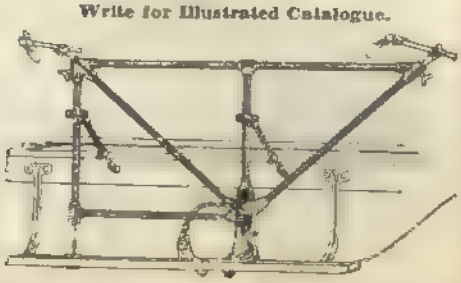
ADJUSTABLE to any size tires, demountable rim or plain.

When ordering, kindly state size of tires used.

Price, complete, for frame and Trunk,

$30.00

Write for Illustrated Catalogue.



Strapless Tire Holder & Trunk Co.

93 MERCER STREET, NEW YORK

Electric Horn

Runs on Dry Cells or Storage Batteries.

A strong, penetrating, warning signal clears the way.

Made especially for Automobiles.

THE ONEITA

"Hear That Tone"

Retails at $15.00

Liberal Discount to Manufacturers and Jobbers

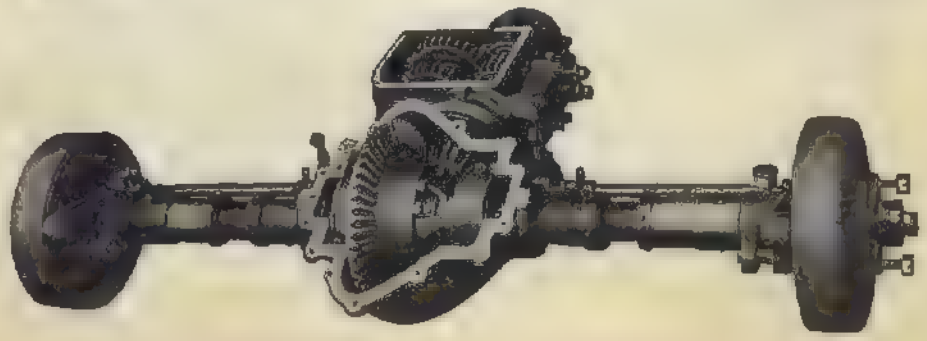
Electric Horn & Specialty Company

UTICA, N. Y.

QUALITY
Unit Power Plant Motors

TRANSMISSIONS DIFFERENTIALS
STEERING GEARS
"TRUCK PARTS" CONTROL LEVERS

Warner Mfg. Co. Toledo, Ohio



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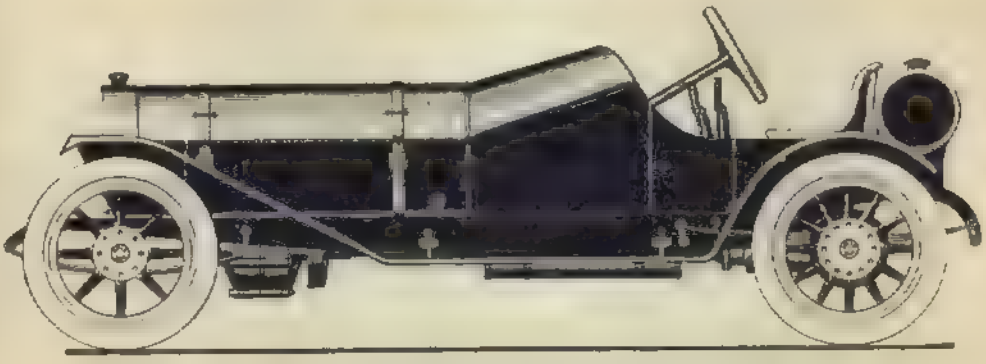

PRICE, $800

R. I. V. Ball bearings throughout.

Bosch magneto.

60 Miles per hour guaranteed.

30 Miles per gallon guaranteed.

We give a signed guarantee for twelve months to each customer.

The same workmanship and material found in any $5000 car on the market.

ONLY CAR, 1919 Broadway, New York City

DISTRIBUTERS:

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New York State: THE ONLY CAR DISTRIBUTING CO. 1919 Broadway, New York City

We will exhibit at the Grand Central Palace Show.

STANDARD BEARINGS AND AXLES

STANDARD IN NAME, QUALITY AND DESIGN

Our product is used by 97% of American motor car manufacturers

"Standard Alloy" and "High Duty" Steel Balls. Brass and Bronze Balls

Standard Annular Ball Bearings

Standard Grooved Ball Thrust Bearings

Standard Roller Motor Bearings

Standard Annular Roller Bearings

Standard Ball Thrust Collar Bearings

Standard Journal Roller Bearings

Standard Taper Roller Bearings (light, medium and heavy series)

Our product includes bearings especially adapted to commercial vehicle construction.

STANDARD ROLLER BEARING CO.
PHILADELPHIA, PA.

PANHARD OIL

Oil is put into an automobile primarily to **ubricate.** It **must** therefore have lubricating body. This body must exist not only when cool, but under high heat. The oil must not thin out or burn up too soon.

It is desirable that this lubrication be accomplished without leaving a carbon deposit on the piston heads or spark plug points. Hence the oil must also be so purified by filtration that it will burn up cleanly.

Thorough lubrication, however, **with** carbon is better for an engine than no carbon **without** lubrication. Carbon may be cleaned off, but worn parts have to be replaced.

Panhard Oil is the **only** cylinder oil which combines a heavy lubricating body with lightness of color and freedom from carbon.

Write for our new booklet, "Motor Lubrication," and the name of the nearest Panhard dealer.

GEORGE A. HAWS, 72 PINE STREET, NEW YORK

EVERY MOTORIST

Truffault-Hartford SHOCK ABSORBER

The pleasure that motoring gives is the thing that makes it worth while.

The Truffault-Hartford Shock Absorber

There's no pleasure where there's discomfort. Realizing this, manufacturers are *bending* every effort to make their cars *smooth-riding, comfortable* vehicles and the fact that most of the prominent ones are using the

TRUFFAULT-HARTFORD SHOCK ABSORBER

as *regular equipment*, should possess a special significance to every car owner. These cars are Truffault-Hartford equipped at the factory

PACKARD
THOMAS
STUDEBAKER-GARFORD
CHADWICK
STEVENS-DURYEA
APPERSON
PIERCE-ARROW
OLDSMOBILE
COLUMBIA
RAMBLER
AMERICAN
HALLADAY ETC., ETC., ETC.

To enable those owners whose cars were not Truffault-Hartford-equipped at the factory to provide for the omission at their garage, we have compiled a blue print for every make of car no matter what its age and model. There's one for *your* car, and with it you can make quick, easy attachment.

SEE 'EM AT THE AUTO SHOW

AT THE NEW YORK, CHICAGO

Hartford Suspension Company

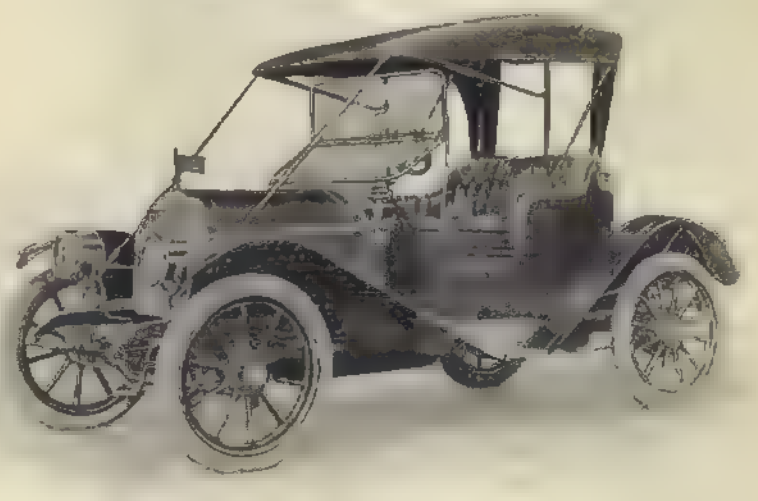
EDW. V. HARTFORD, President

OUR AGENTS SAY

that the easiest thing in the world is selling

THE PENN "THIRTY"

The Pittsburgh Pirate



ROADSTER

YOU WILL SEE IT at the Show, GRAND CENTRAL PALACE

Make a note of this, and if you want a

Simple Silent Sure

powerful, racy, strong, economical, comfortable, light-running, attractive car—a car that **sells at sight,** get in line for unoccupied territory. Look it over; ride in it; drive it yourself; test it any way you wish, and then you will **KNOW WHY** it sells so readily.

ROADSTER, with or without Shroud, $ 975.00
FOUR PASSENGER TOURING CAR, 1075.00

Both models have 30 H. P. Motor, selective type, sliding gear transmission, 3 speeds forward and reverse. Magneto—Guaranteed for life of Car, and Gas Head Lamps are a part of the regular equipment.

Penn Motor Car Company

7510 Thomas Boulevard, - - - Pittsburgh, Pa.

OTTO

made by the largest gas engine builders in the world

Low rakish lines

Longest wheel base of any car at the Price

Ample road clearance

Low centre of gravity—that means safety

Distinctive in looks Distinctive in quality

Simple, powerful motor

Perfected by the most experienced gas engine builders in the world

Straight line drive Encased driving shaft

Change gears and differentials all in one accessible housing

All connections by squared ends in square holes

No nuts or keys to work loose No exposed universal joints

A $2,000 car with $3,000 parts and improvements

Sells wherever seen

MR. DEALER—It's your move! Send for details and proposition today.

OTTO MOTOR CAR SALES CO.

32nd and Walnut Streets PHILADELPHIA

PETREL MOTOR CARS

THE CARS OF ABSOLUTE VALUE

PETREL TOURING CAR
Price, $1500, Complete

To own a PETREL car displays sound judgment in choosing something distinctly above the ordinary,—something that carries the impression of a knowledge of what is BEST in motor car construction.

PETREL CARS are in all ways cars of distinctive worth,—sturdy, substantial and powerful,—graceful and elegant in all their appointments, smooth, easy and economical in operation, lowest in first cost, considering power, quality and performance. The lightness flexibility and great pulling power of the WAITE FRICTION DRIVE give the PETREL CAR unequalled ability to climb hills and negotiate bad roads.

Roadster	$1350, complete
Toy Tonneau	1500, complete
Touring Car	1500, complete

Get the full facts—Inspect the models—have a demonstration! Our catalogue is just brimful of interest,—write for it, to-day

PETREL MOTOR CAR CO., 460-480 Virginia St., Milwaukee, Wis.

Body Makers,--ATTENTION!

Right here is Something Real Interesting

GARDNER ARTIFICIAL LUMBER

A cheap and durable substitute for wood, laminated boards and sheet metal.

SMOOTH, HARD and STRONG,—made of fibres, chemically treated and subject to hydraulic pressure.

¶ Made in large sheets up to 48" wide by 144" long, in thickness ⅛" up. Will not split, buckle nor check,—takes a much better finish than natural wood or metal, can be bent to any curve desired and will retain its shape indefinitely.

¶ There is no grain, so it can be cut in any direction.

¶ Worthy? A trial is all we ask to prove this conclusively. It's quality is worthy your money.

¶ We will be pleased to supply samples and general directions for use upon application.

Gardner Artificial Lumber Co., - Barberton, Ohio

WE CUT ACCURATE METAL GEARS.

GEAR AND SPROCKET CUTTING is our specialty and this plant is second to none in facilities. No order is too large, too small or too difficult. Our decidedly modern equipment permits us to get out blanks and cut any kind of teeth at reasonable prices. Let us quote on your next requirements.

THE NEW PROCESS RAW HIDE CO.

SYRACUSE N.Y.

Send for our 1911 Catalogue

"Nonpareil" Automobile Horns

Our exclusive styles, finish and quality are worthy of the name **"Nonpareil"** which can only be obtained by our up-to-date system and thorough knowledge of manufacturing.

The best Bulbs, Non-corrosive Reeds, Flexible Brass Tubing, Asbestos Lined, Speedometer Tubing any size or length.

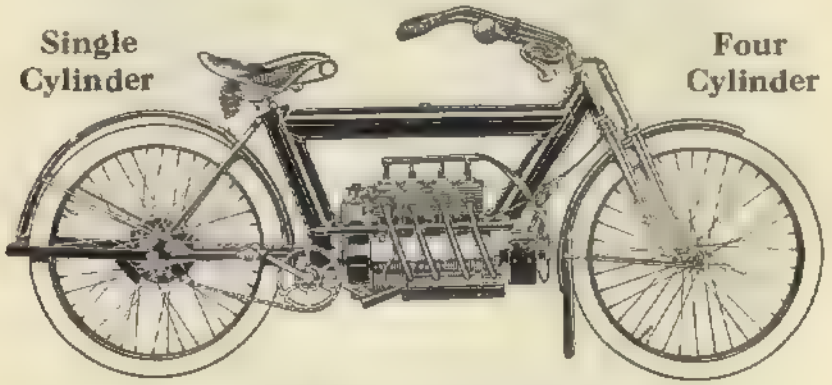
Beware of substitutes and misrepresentations. Quality the Highest. Prices the Lowest.

Nonpareil Horn Manufacturing Company

Removed to 73-75 Wooster Street - - - New York

(Sole Manufacturers of Nonpareil Automobile Horns.)

IT'S TIME TO PLACE ORDERS FOR Pierce Vibrationless Motorcycles



PIERCE

The Pierce Arrow is always the trade-mark of exclusive quality, and never more so than for 1911. Pierce products give greater returns for one's investment than any other motorcycle on the market. You pay nothing for the Pierce name, reputation or factory facilities.

We offer two superb models: the single and the four cylinder. Both are well known to the trade because of previous years on the market, but it is an impressive fact that never before did our models fulfill and satisfy the demands of the most exacting motorcyclist under all conceivable road conditions as do the 1911 models.

The PIERCE SINGLE for 1911 stands ahead of all single cylinder competition in the vital elements of speed, hill-climbing, easy riding, durability and numerous "advanced" features of design.

The FOUR CYLINDER is strictly in a class of its own and is the finest motor vehicle on two wheels, offering to the rider all that modern skill and ingenuity can devise.

Our 1911 complete motorcycle catalog "E" should be in the hands of everyone interested in motorcycling. Write for it now.

Dealers should inquire for our exceptional proposition, "The Agency that Pays."

THE PIERCE CYCLE COMPANY, Buffalo, New York

Pacific Coast Branch, Oakland, California

YALE

4 H. P., Single Cylinder Motorcycle, Flat Belt and Idler, V Belt, Optional, $200. With Bosch Magneto, $235 F. O. B. Toledo, O.

EQUALLED BY FEW SURPASSED BY NONE

Ride a Yale **1911** They Never Fail

HOLDER OF THE WORLD'S RECORD FOR ENDURANCE, 600 MILES AT 20 MILES PER HOUR WITHOUT ONE ADJUSTMENT. RAN 132 HOURS WITHOUT FAN OR OTHER COOLING DEVICE, AND DID NOT OVERHEAT, DISPROVING ALL EXPERT OPINIONS.

New Models are being Delivered **Room for a Few More Live Ones**

Exhibiting at Space 713, New York Automobile Show, Jan. 16-21

THE CONSOLIDATED MANUFACTURING COMPANY

1710 Fernwood Avenue, Toledo, Ohio

Member M. M. A.

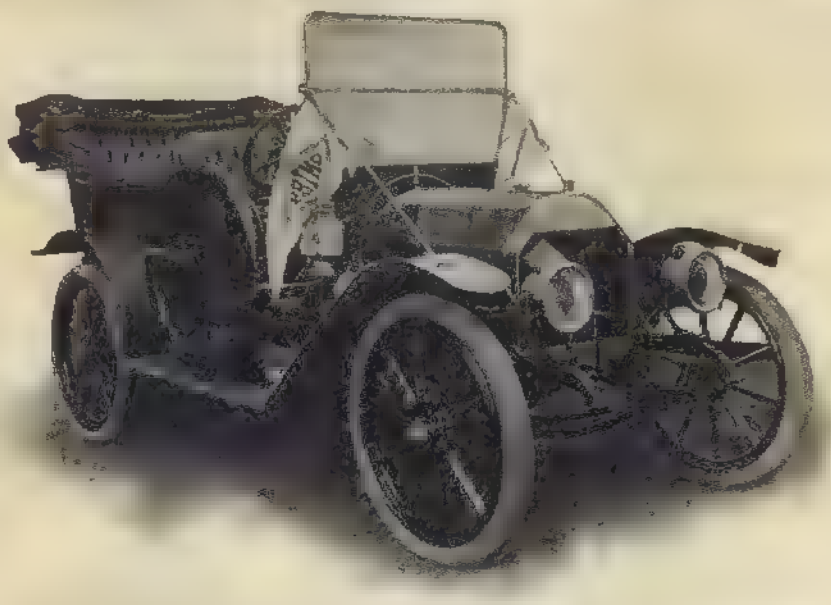
7 H. P., Twin Cylinder Motorcycle, V or Flat Leather Belt with Idler, Bosch Magneto, $300. F. O. B. Toledo, O.

YALE

PRIMO

"The Southern Automobile"

4 Models - $1,250 to $1,750 - 4 Models



Model F. P. 11. 5-Passenger, $1,750. Fully Equipped with Bosch Magneto, Top, Windshield, Lamps, Horn, Tools, etc.

¶ The verdict of unbiased automobile men who have examined the chassis of the Primo and who have carefully looked over our body designs, is that we have a car of beautiful design, powered with a plant that will run and keep running. They tell us that we are to be congratulated on having demonstrated that a Southern concern can produce a car equal to those made in the eastern and middle west auto-manufacturing centers.

¶ We built the Primo to anticipate Southern conditions, to travel smoothly over rough hilly country and give a maximum of service at a minimum price. It is the car of correct proportions to operate at the lowest up-keep expense. Every moving part of the Unit Power Plant is encased, yet easily accessible, even the valves, and no engine pan is used or required. It is equipped with Bosch High Tension Magneto, Schebler Carbureter, Multiple Disc Clutch, Shaft Drive, etc. 56 and 61-inch Treads.

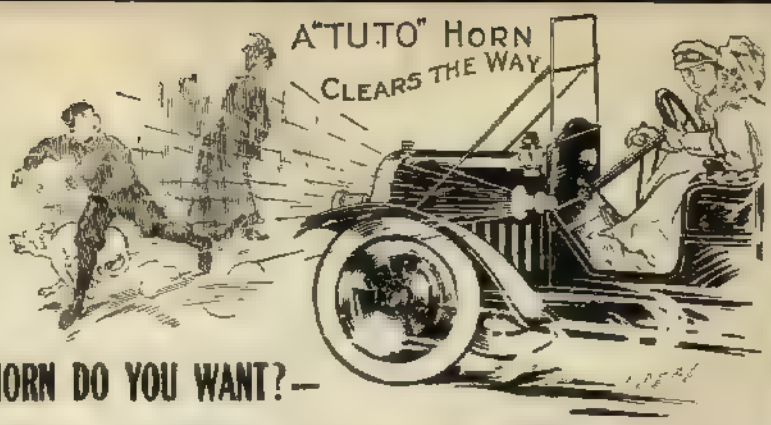
¶ *We have some desirable territory for live and aggressive agents.* IMMEDIATE DELIVERIES *As we are now laying out the routes of our Road men, it would be wise to write us now.*

Primo Motor Company

Factory and General Offices
Ga. R. R. and Powell Street

Atlanta . . . . Georgia

Which-
Which-
Which-
Which-



KIND OF HORN DO YOU WANT?—

A Horn That Positively Clears Your Way Always

or one that merely makes a "noise" and causes you an endless lot of trouble, danger and expense—WHICH?

"TUTO" Horns are made on a common-sense plan,—two in one, mild warning and forceful warning, with one horn and one button. New and positive. Pleases all.

"Tuto" "Tuto"

Is an electric horn operated by a touch of the thumb, and is always ready instantly for every service. It never fails to act,—costs nothing to operate,—and can be installed in a few minutes by yourself. It convinces you itself, when seen and heard. Used by all particular motorists. WRITE FOR OUR FULL DESCRIPTIVE BOOKLET AND MOTORISTS' GUIDE. Sent FREE to all Dealers and Motor Owners.

Ask Your Dealer to See a "Tuto" Horn

THE DEAN ELECTRIC COMPANY

Taylor Street **Elyria, Ohio**

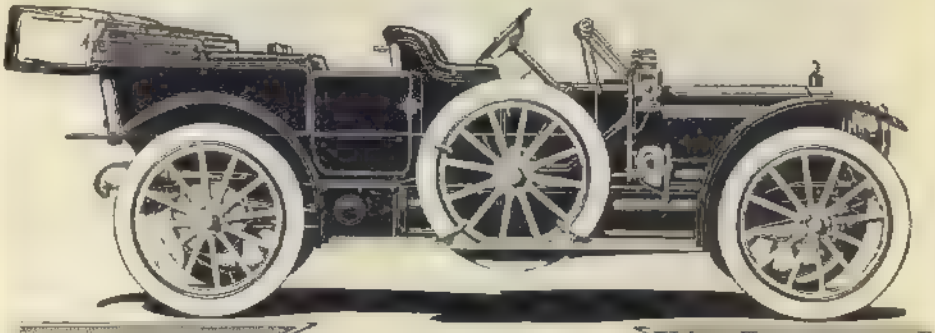
A HORN THAT WILL NOT BE HEARD BY THOSE IN YOUR WAY IS WORTHLESS

IN A "TUTO" HORN THE PEOPLE HEAR AND HEED

GET A "TUTO" HORN TODAY

Rambler

Motor Cars



Rambler
Sixty five

COMFORT in the Rambler has been attained by careful study of owners' preferences. Forty-inch wheels, big tires, and 128-inch wheel base neutralize the inequalities of the road. Seven-eighths elliptic springs and shock absorbers soften the impact of the jolts and limit reaction. The distance between the seats and the floor is just right, and the steering pillar may be adjusted to suit the comfort of the operator. The leather and hair used for upholstering is that found in the finest club furniture. The Spare Wheel removes worry about tire trouble. The brakes, being larger than necessary, provide a feeling of security. The safety starting device protects you from injury while cranking. The offset crankshaft and straight line drive enable slow driving on high gear in crowded traffic, and obviate the necessity of rushing the hard pulls through sand and up grades.

In principal cities a telephone message to the Rambler representative will bring a car to your door for inspection. A postal will bring you the Rambler Magazine.

The Thomas B. Jeffery Company

Main Office and Factory, Kenosha, Wisconsin

Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco

THE ARBENZ CAR

36" Wheels=120" Wheel Base

"From A to Z no Car Like This"

Torpedo
Fore-Door Touring
Roadster

Low—Racy—Modern—Classy

$1700.00

You may yet be in time to secure the Agency in your territory for this HIGH QUALITY CAR at the LOW PRICE.

THE SCIOTO AUTO CAR CO.

CHILLICOTHE, OHIO

Reo Proof

Every Reo every year has proved itself good and plenty; but see what the 1911 Reo did—within two short months of its coming out!

Endurance Won the Kansas City Star Trophy in what proved to be the most strenuous and most complete test of a motor-car during the present year, against all of the best American cars. The highest road score, the highest mechanical score, without regard to price or class.

Won the Kansas Magazine Endurance Contest. Easily won its own class, and had a better record than any car in any class.

Hill-Climbing Beat best previous record for Mt. Hanaka (23.5 miles) by 12 minutes. Reo time 1 hour 5 minutes. Would have done even better but for dangerous rain and fog, making the road slippery and hard to see ahead.

Racing In a 50-mile race near Denver the Reo beat a Chalmers, well known for its racing record, by 10 minutes, making the distance over sandy roads in 57 minutes 43 seconds—an average of 51⅓ miles an hour. At the Empire City track race, on November 15, at Yonkers, New York, the Reo won the 10-mile race against much higher priced cars. Owing to heavy rains the track was heavy and sandy, but the Reo time was 13 minutes 52 seconds.

Across the Continent in 10½ Days The Reo beat the record of a $4000 six-cylinder car by nearly 5 days, making the trip in 10 days 15 hours 13 minutes. A wonderful performance. Nearly 4000 miles, and had to drive through deep mud and sand, track ess deserts, deep washouts, and no detours. And not a thing done to the Reo engine the whole trip except to change one spark-plug.

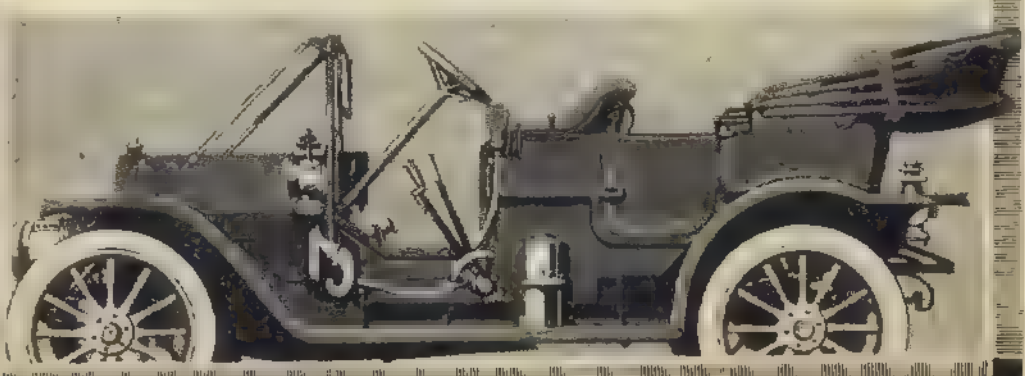
No other 1911 motor-car can show such records and proof. Here are four kinds of proof: power, speed, endurance, reliability. Is there anything else you want to know?

Write us. Send for Reo Catalogue. Also "Coast to Coast" in Ten Days

Reo Touring Car or Roadster $1250
Reo Limousine or Landaulet $2000

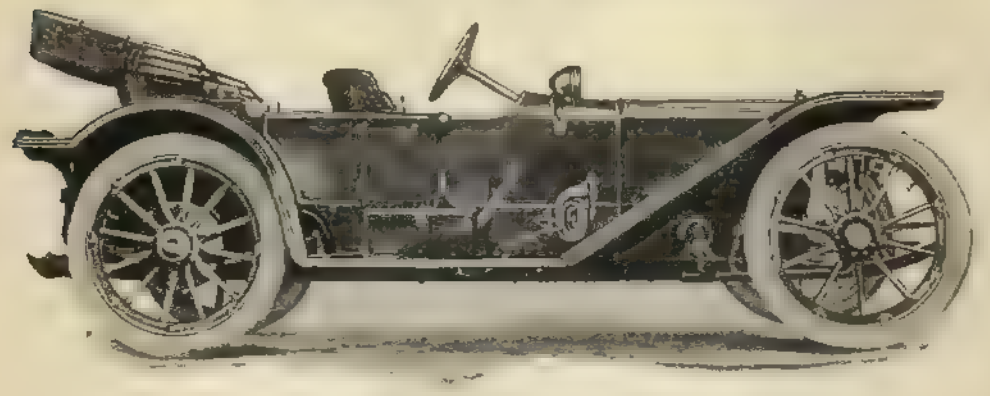
R M Owen & Co Lansing Mich General Sales Agents for Reo Motor Car Co

Licensed under Selden Patent



THE AMERICAN

A Car for the Discriminating Few



The Traveler—50 H. P., 40-inch Wheels—$4,250

¶ The larger and principal cities have furnished buyers for virtually all of the Americans we have made to date. Our cars have naturally made their strongest appeals to an exceptionally discriminating clientele.

¶ That just as discriminating folk are to be found in practically every other city in the land has been proved by a demand for allotments elsewhere which we have been unable, heretofore, to consider.

¶ Our manufacturing facilities will now permit a greatly increased output, to which we shall give as wide a distribution as possible.

¶ The American is so distinctive, the safety conferred by its underslung construction, its ample power plant, its high wheels and its literally straight line drive, make its agency especially desirable beause of the rapid growth of American colonies wherever the cars have been seen, tested and enjoyed.

¶ Of course, we shall use exceptional care in the selection of our new dealers, for we are now ready to place in the hands of the right man a complete line—a splendidly rounded business—which will instantly attract the most desirable patronage in his city. Write to-day.

In the nine models for 1911 are to be found these especially popular cars:

Traveler,	**$4,250**	**Roadster,**	**$4,250**	**Tourist,**	**$4,250**
Traveler Special,	**5,000**	**Roadster Special,**	**5,000**	**Limousine,**	**5,250**

American Motor Car Company, *Dept. U.,* **Indianapolis, Ind.**

Licensed Under Selden Patent

SCHACHT — $1385

5-Passenger Touring Car—120-inch Wheel Base—34-inch Wheels

You Can Own a Big 4-Passenger Touring Car and Still Save Money

Until this year the motor car buyer was given a choice of two alternatives. Either he had to pay a big price in first cost and up-keep for the joy of owning a big, powerful car, or—

He had to content himself with a smaller, less powerful car than he really wanted in order not to make motoring an extravagance.

Now the new 1911 Schacht Touring Car offers you everything in size, power, speed, comfort and appearance that you want, at a cost that makes its purchase *an actual economy.*

THE SCHACHT

is a car for the whole family—it has the large wheels and long wheel-base that are necessary to smooth, rapid, comfortable riding over rough roads. It has power to spare—full 40 H. P. Dealers find a demonstration and a statement of the price conclusive arguments.

If you want a smaller car or a delivery car—

The 3-in-1 Schacht—$850

offers you greater value and more capacity for all-round service than any car at its price on the market.

Readily changed in five minutes' time from a Runabout to a 4-Passenger Car or Delivery Car—by the addition of a rear seat or wagon box—*it is really three cars in one at the price of one.*

The Schacht Motor Car Company

2805 Spring Grove Ave. **CINCINNATI, OHIO**

See our Exhibit at the Chicago Automobile Show, January 26th to February 4th.

As a 4-Passenger Car

We have a special proposition for established dealers in certain territory where we desire better representation. Write at once.

As a Runabout

Catalogue and full particulars mailed on request.

As a Delivery Car

Go and Look at the Hudson "33"
Howard E. Coffin's Masterpiece

For weeks the showrooms of Hudson dealers have been thronged by anxious motorists who wanted to see the 1911 creation of Mr. Coffin, the Hudson genius, who is regarded as America's master builder of motor cars.

The announcement that his latest and greatest car would soon be on the market brought hundreds of requests for demonstrations. Many went even further than that. They contracted for cars and paid their deposits on them, just from seeing the photograph of the Hudson "33" and knowing that it was "by Coffin."

In this case, realization is better than anticipation. The car is better than the picture. Those who have already contracted for their Hudsons are setting more store by their 1911 touring days than before they actually saw the models. They bought because of a man's reputation. They figured that you can always tell what a man will do by what he has done.

And since the name of Howard E. Coffin is linked inseparably with some of the greatest American successes in motor car designing, those early buyers, now looking at their cars for the first time, can lean back and say, "I told you so."

Don't delay seeing the only new car of the year. You need to know about it, because everybody is talking about it.

The Hudson line comprises four models:

Hudson "33" Touring Car, $1,250

Hudson "33" Pony Tonneau, $1,300

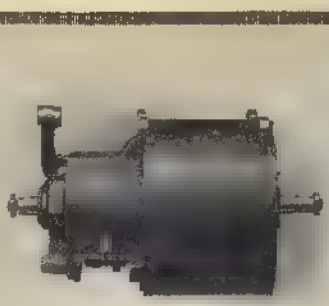
Hudson "33" Torpedo, $1,350

The Roadster, $1,000

HUDSON MOTOR CAR CO.

4049 Jefferson Ave. :: :: Detroit, Michigan

Licensed under Selden Patent



The Electric with the Husky Motor at the Shows

AT the New York Show, Madison Square Garden, and the Chicago Show, The Coliseum, the Waverley's husky motor will be demonstrated in connection with the exhibit of Silent Waverley Cars.

This motor has aroused the interest of electric carriage people everywhere on account of its great overload capacity, unsurpassed by any motor of its size.

It is of the multipolar variety, series wound, specially designed to meet the excessive overloads that develop on unpaved streets and hilly roads. Thus the ordinary street-car motor is built for an increase of 250% in the turning power for each 100% of overload. The Waverley Motor increases 360% for each 100%. The efficiency, on the other hand, is practically uniform from minimum to maximum load.

Annular bearings, two brush holder sets, the extra wide commutator, the large hinged aluminum door and the full aluminum end brackets, both right and left, are late advancements in the motor that will appeal to you.

Specially selected metal of the greatest magnetic qualities is rolled for the Waverley Motor. This is one of the secrets of its amazing efficiency.

Note the unusual **size** of the Waverley Motor. Yet it has none of the useless weight of others. Look at the shaft—as large as the shafts used in commercial vehicles.

In all these particulars the long experience (fifteen years) of the Waverley Company in building its own motors has been a factor of tremendous value in the development and improvement of this exceedingly important feature of the mechanism. The proper disposition of the weight of the motor is an important consideration in designing a car, and in all the late type Waverleys it will be found attached to the body above the springs, thus cushioning the effect of its weight upon the tires.

You will also be interested in the Waverley High Efficiency Shaft Drive, the Waverley No-Arc Controller and the Waverley Herringbone Gears.

Our 1911 Models will be displayed. Note their beauty of design and luxury of finish and upholstering.

Solid or pneumatic tires. Exide, Waverley, National or Edison Battery. Send for our handsome Art Catalog, illustrating the full Silent Waverley line of pleasure carriages. Address,

THE WAVERLEY COMPANY

Main Office and Factory, 184 South East Street, Indianapolis, Ind.

Chicago Branch, 1714 Michigan Avenue

OUR MAINTENANCE CONTRACT MAKES IT EASY TO SELL WAVERLEY ELECTRIC TRUCKS

Let us tell you how to build up a big business in electrics. We also make electric trucks for every business purpose.

SEE OUR EXHIBITS AT THE SHOWS

New York – Madison Square Garden, Space A-4

Chicago – First Regiment Armory, Space A-2, first week
Coliseum, Section B, second week

W. F. S. MOTOR CARS :: *1911 Models*

Four Cylinder, 20-25 Horse Power. Bore, 4⅛"; Stroke, 5¼"

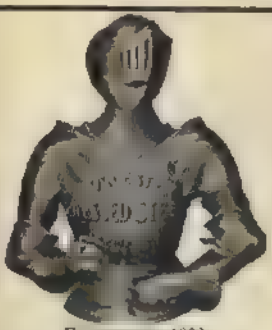
Five-Passenger Touring Car . . . **$2250**
(With Fore-Door and Oil Lamps only.)
Runabout, with R mble Seat . . . **$2150**
Five-Passenger Limousine **$3200**
Torpedo Type Runabout . . **$2200**
(With Beetle Back and Folding Rumble Seat)
Four-Passenger Gunboat Tourabout . **$2300**

The W F S. is unquestionably the greatest value offered to-day, being built throughout of the highest grade material.

The W F S is for those who demand a superior car—a car that combines **power, simplicity, style** and **economy.** It has no superior at any price

We invite correspondence from agents whose clientele demand a car of the **highest grade.**

THE W. F. S. MOTOR CAR CO. : 4224 Ludlow St., Philadelphia, Pa.



ESTABLISHED 1883
CABLE ADDRESS "PRESTEEL"
PHONES 1000 L & 1

WE SPECIALIZE IN MAKING HIGHEST QUALITY

AUTOMOBILE PARTS

FROM PRESSED STEEL, BRASS, BRONZE, ALUMINUM AND THE NEW STEEL ALLOYS

Chicago Office—1243 Peoples Gas Building. Detroit Office—1417 Ford Building

WORCESTER PRESSED STEEL COMPANY

WORCESTER, MASSACHUSETTS

THE GUS BALZER CO.

1777-79 Broadway, Dept. F
IN THE CITY OF NEW YORK

Write for New, Artistic Catalogue, Showing Beautiful
LIMOUSINE BOUQUET HOLDERS

STEVENS IGNITER, ONLY $20.00
Including Combined Timer and Distributer, Switch and Coil
STEVENS CARBURETOR, ONLY $7.50

Monograms and Trade Names, Adjustable Side Mirror
Tire Air Tank, "Air-on-Tap"
License Plates and Holders, and Other Accessories

"SILVER KING"
"AUTO QUEEN"

It has something that buyers know is a real advantage, something that lifts it out of a class it would otherwise be in, and lucky is the jobber who sees it first. You need the adjustable handle on "SILVER KING" to get at the difficult places around machinery. "AUTO QUEEN" is something new and sold for much less money. Write for prices and electros to use in your catalogue

Manufactured by **C-M-B WRENCH CO., Industrial Bldg., Syracuse, N. Y.**

THE NOTE PIERCING THAT PENETRATES

The SIRENO

THE NOTE PIERCING THAT PENETRATES

ANNOUNCEMENT FOR 1911

The SIRENO Company announces for the year 1911 in addition to its improved Automobile Types of Warning Signals, also Marine Types and a Motorcycle Horn.

SIRENO AUTOMOBILE TYPES

As the name implies, the SIRENO Signals produce a note of the siren quality, a tone clear and bell-like, with wonderful penetrating power.

The warning note of the SIRENO Signals is not harsh, but a piercing tone, perfectly controlled and modulated at the will of the operator—a long range and a short range signal in one. At long range it has the effect of an air whistle and at short range, while it instantly forces attention, it does not startle or frighten because it has not the explosive abruptness of some signals.

Automobile Type—with Long Projector

PRICES.

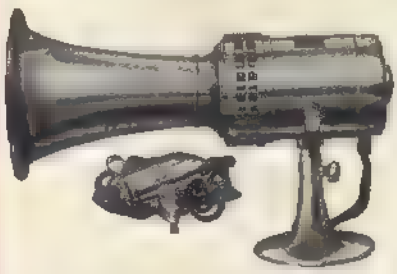
"SirenO" (Long or Short Projector, optional)	$35.00
JunioR " " " "	25.00
MidgeT, with Projector	18.00

Complete with regular Switch, Cables, Bolts, Nuts, Instructions, etc.

SIRENO MARINE TYPES (NEW)

SIRENO Marine Types differ from the Automobile Types only in point of finish, style of operating switch and method of attachment, the Marine Types having a special swivel deck base. They are furnished either in hard Baked Black Enamel or extra heavy Nickel Plate, both of which are impervious to the action of salt water and very durable.

ALL ARE ELECTRIC and operate from the regular ignition battery without in any way interfering with its regular duties



Marine Type—with Long Projector

PRICES:

"SirenO," with Long Projector	$37 50
JunioR " " "	27.00
MidgeT " Projector	19.50

(Specify Black Enamel or Nickel Plate.)

Complete with Marine Switch, Cables, Bolts, Nuts, Instructions, etc.

THE SIRENO CYCLEPHONE (NEW)

The CYCLEPHONE is a siren whistle, a long distance warning signal, designed exclusively for motorcycle use. Operates by friction with the front tire.

A light, aluminum turbine, or fan, is mounted on one end of a shaft (running in two sets of ball bearings), on the other end of which is a friction pulley. A touch of the lever brings the friction pulley in contact with the moving tire, revolving the turbine, which generates the air currents that produce a note of tremendous carrying power.

The CYCLEPHONE may be attached to nearly all standard makes of motorcycles. In one or two instances an adapter is necessary, therefore **specify make of motorcycle when ordering.**

The CYCLEPHONE
Price, $12.00

The SIRENO Catalog, 1911 Edition, fully describes the various types of SIRENO Warning Signals and SIRENO Accessories. Mailed upon request.

To the Trade:—A catalog is incomplete without a description of SIRENO Signals. Write for a copy of the "SIRENO Cut Book," showing electrotypes of various styles and sizes.

See our exhibit at Madison Square Garden, Space No. 317

Electric Warning Signals and Accessories

The SIRENO Company

1107 Taylor Building
New York
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Speedwell MOTOR CARS

A CAR of beautiful appearance and faultless performance greatly enhances the pleasures of motoring. Speedwell cars are the center of admiration in any company. Speedwell owners take keenest satisfaction in their ability to maintain a leading position with all road users.

The Speedwell combines all the qualities that a good car should possess.

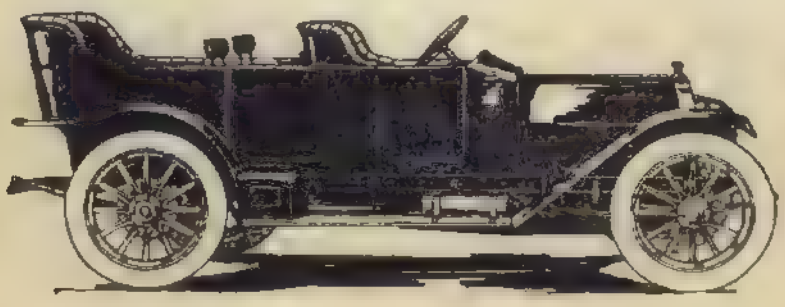
A Surprise

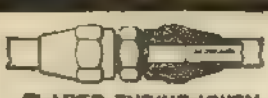
Besides our regular models we will exhibit at the Madison Square Garden Show in New York a new and novel body design that will be the sensation of the show. Be sure to see it.

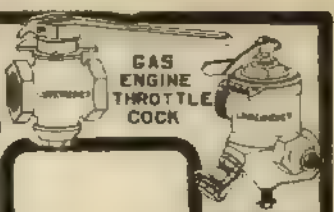
Licensed under Selden Patent

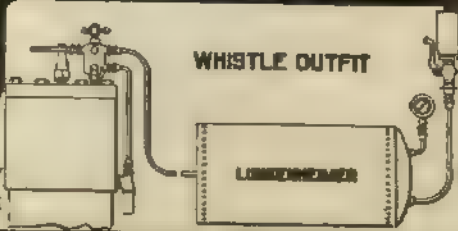
The Speedwell Motor Car Company

Dayton, Ohio









LUNKENHEIMER MOTOR BOAT SPECIALTIES

Will be found on the best equipped boats. They are of the highest grade and are guaranteed to give satisfaction. The line includes Oil and Grease Cups, Lubricators, Globe, Angle, Gate and Check Valves, Cocks, Strainers, Whistles, and Whistle Equipments, Unions, Exhaust Pressure Regulators and Generator Valves.

YOUR LOCAL DEALER CAN FURNISH THEM. IF NOT, WRITE US. WRITE FOR AUTOMOBILE AND MOTOR BOAT BOOKLET

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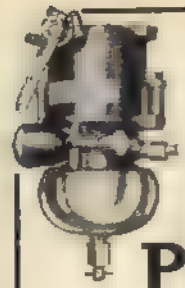

HOW THE STEWART Precision Carburetor

Eliminates Carburetor Difficulties

Trouble

"Automobile" Magazine says: When the carburetor becomes unruly the trouble may be:

a —Nozzle too large.
b Nozzle too restricted.
c —Needle in nozzle not properly set.
d —Depression too low.
e —Depression too high.
f —Too little initial air.
g —Too much initial air.
h —Too much auxiliary air.
i —Too little auxiliary air.
j —Float too high.
k —Float too low.
l —Passageways stopped up.
m Air locked.
n —Pocket of water.
o —Float punctured.
p Mechanical interferences.
q —Leak around manifold flanging.
r —Adjustment awry.
s —Filter stopped up.
t —Low pressure.
u —Control system awry.
v —Carburetor too small.
w —Carburetor too large.
x —Manifold not right.
y —Poor gasoline.
z —Gasoline not turned on.

Less Trouble

Note the difference if the Stewart Precision Carburetor is used, as follows:

a —Impossible; no nozzle used. We simply
b —use a tube many times larger than the required capacity.
c —No needle in nozzle.
d —Impossible, as depression is a constant factor and not dependent on form of passage.
e —
f —Initial air absolutely constant and not adjustable.
g —
h —So-called auxiliary air not used, the air all
i —entering at one point.
j —The float level is unimportant, as the aspirating point is many times higher than the thickness of float.
k —
l —Not likely, as they are straight and very large.
m —This pertains to the supply pipe.
n —Large settling space in Bowl, but might be possible.
o —Impossible. We use cork float purposely.
p —Impossible. No mechanical connections, only one moving part.
q —Possible.
r —Not likely, as adjustments are very simple, but possible.
s —Possible.
t —Possible.
u Possible.
v Possible.
w —Possible.
x —Possible.
y —Not likely, as we can use a very heavy fuel.
z —Possible.

Out of 26 named possible "troubles" found in the average carburetor, no less than 14—over half—are done away with entirely if the Stewart Precision Carburetor is used. Some of those remaining are comparatively unimportant; and some do not apply to the carburetor at all.

Isn't This the Carburetor You Want?

MANUFACTURED BY

Alfred C. Stewart Machine Works, 1008 Santee Street, Los Angeles, California

NEW YORK BRANCH:
FILLMORE CONDIT, Mgr., 17 Battery Place

CHICAGO REPRESENTATIVE:
L. S. SNOW & CO., 256 East Madison St.

ATTENTION! Motor Car Builders!

Manufacturing Details Relieved Product Improved

We specialize in the production of machine parts, such as

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All to your specifications where required. We offer you a better product at a reasonable price and help you with your manufacturing details.

Try us on Helical Cut Motor Gears and let us solve the motor gear problem for you.

Bearing Troubles Eliminated

Our improved system of die casting and the use of only the highest grades of bearing metals enables us to offer you a die cast bearing proposition of superior merit.

We furnish die cast bearing bushings to your specifications in any of the high-grade motor babbitts or Genuine Parsons White Brass.

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FOR THE GARAGE

Designed especially for garage use, our line of Belt and Motor Drive Air Compressors, for tire inflating and cleaning purposes, lighten labor in the garage and save you money. Single and Three cylinder styles.

A post card brings a circular.

The F. W. Spacke Machine Co.
INDIANAPOLIS, IND.

A Book Valuable to You—Free for the Asking

One copy of a handsomely printed book, "What the Motorist Should Know," profuse with etched half-tone reproductions in black, on fine, coated paper, with letter-press in a rich, deep green, cover in green, gold and black, will be sent to every car owner or intending purchaser, free, postage paid.

Your copy of this book will be put in the mail, on its way to you, the day your request is received.

This interesting and beautifully printed book was compiled by a man acknowledged generally to know as much, if not more, about the automobile motor and what to do with and for it than any other one man. In this book he gives you the benefit of his knowledge briefly, in simple, clear language—gives the sum of his experience boiled down, quickly read and easily understood -avoiding technical terms.

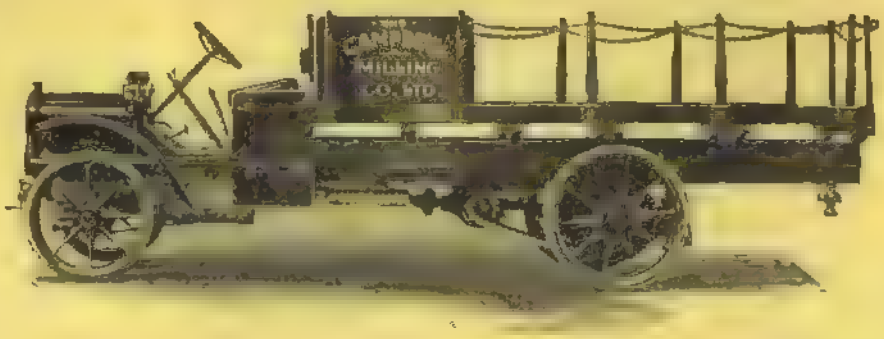
This book is invaluable to the beginner and more experienced owner alike, because it treats intelligently and clearly the important things about which the average automobile owner knows the least—knowledge that is generally bought dearly—sometimes with the price of a car.

It is intended that every automobile owner shall have the opportunity to get a copy of this book, and your copy simply awaits receipt of your name and address, when it will be sent to you direct. Send for your copy to-day, while you think of it, and receive it promptly by return mail. Be sure to address Booklet Clerk.

Vacuum Oil Company

29 Broadway, New York

NOTE The Vacuum Oil Company, Rochester, N. Y., manufactures the celebrated automobile oil—Mobiloil, the oil used by winning motorists the world over. Aviators generally use Mobiloil exclusively because of its unapproached quality and dependability. Care should be taken to see that cans are sealed, to avoid substitution of inferior oils.



THIS TRUCK WILL DO THE WORK OF SIX TO EIGHT HORSES

✦ ✦ ✦

IF you have a stable of six or eight horses to do your delivery work, you know what it costs to keep the stable running. If you have two, three or four times that number, you are all the more impressed with the cost of your delivery plant. One White gasoline truck will do the work of six to eight horses—more reliably—more certainly than horses. The truck is untiring, capable of being worked twenty-four hours a day if necessary, a big advantage in holiday season. It furnishes a better-looking delivery, stamping the owner as progressive and up-to-date. But best of all, it's cheaper. If there is no other sense in which a motor vehicle appeals to you—the White Truck must reach you by the saving it makes in your business.

WHITE MOTOR TRUCKS

The White Motor Trucks are just as well built as it is possible to make them. All that the latest scientific treatments of steel can do to make frames, motors, transmissions—every part of the car unwearable, unbreakable—has been done. We are building trucks, not for to-day, nor to-morrow—but trucks that should make horses impossible, because their service is too costly. Why not get in touch with us at once—find out the saving our customers are actually making—find out about the life of tires on our wagons—find out to your satisfaction that about all any customer of ours has to buy is gasoline and oil. If you want this kind of service, the White Trucks and Delivery Wagons will give it.

Why not write to-day for more intimate details, catalogues and testimonials?

The White Company

860 EAST SEVENTY-NINTH STREET, CLEVELAND

CHILTON COMMERCIAL CAR JOURNAL

will soon make its initial bow to the public and its appearance will be coincident with the successful establishment of that branch of the automobile industry which is about to repeat the great success achieved by the makers of pleasure vehicles.

The CHILTON COMMERCIAL CAR JOURNAL is the realization of an ambition which has been growing for five years, and the appearance of this publication at this time is psychological, because the industry has now assumed proportions sufficiently great to require the assistance which a high class commercial car journal can render.

It therefore is our desire and our determination to make this new publication the most representative journal of its kind in the world.

The CHILTON COMMERCIAL CAR JOURNAL is to be published by the CHILTON COMPANY.

To nearly everyone in the industry this statement will be a sufficient guarantee of its superiority, because the same policies which have made the CYCLE & AUTOMOBILE TRADE JOURNAL the largest motoring publication in the world will be employed in the upbuilding of the CHILTON COMMERCIAL CAR JOURNAL. It will be a medium par excellence which will be valuable to the buyer and seller alike

The CHILTON COMMERCIAL CAR JOURNAL will be issued once a month, and the subscription price will be $1.00 per year. The first issue will appear as soon after January, 1911, as it is possible for the publishers to arrange all the mechanical and business details to insure the production of the highest type of publication in this field.

The Subscription Department is ready to receive orders, and the Advertising Department to answer questions.

Chilton Company, Market & Forty-ninth Streets PHILADELPHIA, PA.

The CANNON BALL HOUSE DOOR HANGER

In response to repeated demands that we manufacture a House Door Hanger similar in construction to the Cannon Ball Barn Door Hanger, we present herewith our Cannon Ball House Door Hanger and Track, which we believe possess features of merit and advantages not found in other makes of goods in this class.

Note As Follows:

That the Hanger and plate for attaching to the door are made of steel.

That the adjusting screw has an extra long bearing in the frame of the hanger, making a very strong and positive adjustment and one that won't work loose.

That two specially formed rollers are used which have steel bushings covered with sole leather and that these wheels are indestructible have a wide tread, are frictionless, noiseless, are fitted with long steel roller bearings, and are therefore light running.

The Hangers are packed one full set or half a set in a wooden box, neatly labeled. Ten full or half sets in a crate

"The Cannon Ball Beats them All"

Cannon Ball House Door Track

will need no introduction to the trade who are already entirely familiar with the Cannon Ball Barn Door Track. The House Door Track is made identical with the Barn Door Track, except that the Cannon Ball House Door Track is made in lengths up to 12 feet and is furnished with a wood header for supporting it. It is not necessary to take the track down to adjust it as is the case with other makes of House Door Track. Cannon Ball House Door Track is adjusted quickly at the door opening with the use of a screwdriver only. Either end of the track may be raised or lowered as desired

The Cannon Ball Store Ladder

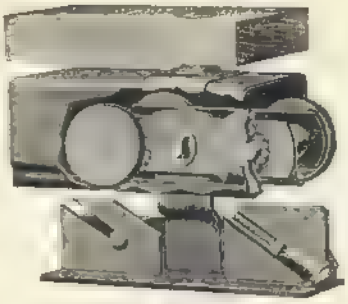
We also desire to call the attention of the trade to the Cannon Ball Store Ladder as illustrated in the cut at the left. The same track is used and the same special wheels as on the House Door Hanger. The floor wheels are fitted with rubber cushioned tires which turn on steel axles

WRITE US FOR FULLY DESCRIPTIVE CIRCULARS AND PRICE LISTS OF THE ABOVE GOODS. A SAMPLE ORDER WILL CONVINCE YOU OF THEIR MERITS

HUNT, HELM, FERRIS & CO.

Mfgrs. HARVARD, ILLINOIS

Lawrence No. 21 Trolley Parlor Door Hangers

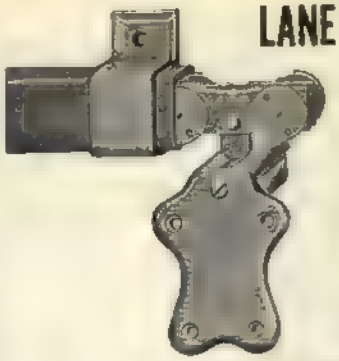


Have both horizontal and perpendicular adjustment. Noiseless fibre wheels and long roller bearings. Run in our off-set Trolley Door Track Safety Hook holds end adjustment securely.

Send for complete catalog

Lawrence Bros., Sterling, Ill.

LANE'S TROLLEY



Barn Door Hangers and Track

Highest grade of bicycle **ball bearings.**

Fastest running Trolley Hanger.

Door adjustable toward or from building.

LANE BROS. CO., PROSPECT & RIVER STREETS POUGHKEEPSIE, N. Y.

EAGLE LOCK CO.

TERRYVILLE, CONN.

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CABINET LOCKS **TRUNK LOCKS** **PADLOCKS**

NIGHT LATCHES **WOOD SCREWS**

Things That Roll

Wonder Barn Door Rollers
Channel Strap Rollers
Martin Bird Rollers
Warehouse Rollers
Rolling Store Ladders

All of the above roll on Channel Steel Track which is stronger than any other of the same weight. Write for catalogue and Hanger, titled "Progress." Attractive prices and exclusive sale given, with a positive guarantee.

S. B. MARTIN, DALTON, O. BOX 9

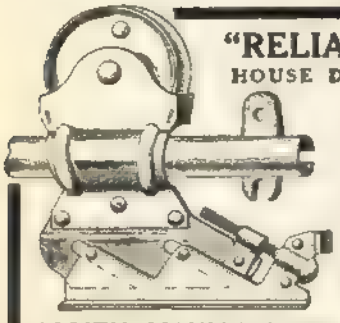
"GRAND RAPIDS"

All Steel Sash Pulleys

This is one of 33 styles

Write for Circulars and Prices

GRAND RAPIDS HARDWARE CO.
21 Pearl Street
Grand Rapids, Mich.



"RELIABLE" ROUND TRACK HOUSE DOOR HANGERS

Always stay on the track, but never stay on the Dealers' shelves. They're a real improvement in House Door Hangers. That's why they sell well and satisfy. Send for catalogue No. 24 A.

ALLITH MANUFACTURING COMPANY
The Original Round Track Hardware Manufacturers
Taylor Street and Forty-Third Avenue, Chicago

T. H. Nevin Co.

ESTABLISHED 1841

PAINT MANUFACTURERS

PITTSBURGH, PA.

All parts of Parts and Fittings can be finished to advantage on a

GRINDSTONE

Let us know your requirements and we will select one just suited to your work.

THE CLEVELAND STONE CO.
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THE ORIGINAL MANUFACTURERS OF

SAFETY FUSE

SIMSBURY, CONN., U. S. A.

Friction Transmission

Cartercar

Self-Starter, Certainly

The big feature of the Cartercar—in winter and summer—is perfect service

No matter how bad the weather or how far you wish to go—your Cartercar will give just as good service as under the most perfect conditions.

The patented Friction Transmission gives a pulling power amply sufficient to take the car through bad, muddy and sandy roads and even up 50 per cent hills. For many years this transmission has given great satisfaction to thousands of Cartercar drivers.

The self-starter eliminates all bother in starting. It makes winter driving especially delightful.

You have any number of speeds with the Cartercar, easily and noiselessly controlled with one lever.

This easy control, with three strong brakes, makes the car extremely safe for anyone to drive.

The Patented Chain-In-Oil Drive is another excellent feature. It is absolutely noiseless—is the most economical means of transferring power—and requires no attention except an annual replenishing of the oil. Grit and sand being kept out, there is practically no wear on the chain.

The full floating rear axle is another great improvement. The axle shafts can be taken out without bothering the differential—or even jacking up the car.

Three-quarter elliptic rear springs—Prest-O-Lite tank—and many other excellent features. Five good models, touring cars, roadsters, and coupes at from $1200 to $2100

LET US SEND YOU COMPLETE INFORMATION REGARDING THIS EXCELLENT CAR

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CHICAGO BRANCH . . . . . 2027 Michigan Avenue
KANSAS CITY BRANCH . . . . . 1706 McGee Street

Public Service Vehicles.

Rambler Municipal Service Gasoline Cars.

Made by Thomas B. Jeffery Co., Kenosha, Wis.

RAMBLER TYPE B CHEMICAL WAGON AND HOSE TRUCK.

Motor, 45 h. p., four cylinders, 5 x 5½, cast separately water cooled, jump spark ignition from magneto and storage battery selective sliding gear, three bearing transmission, 3 speeds forward, direct shaft drive on third; internal expanding clutch 2 sets of brakes, expanding and contracting on rear wheel drums, artillery type wheels pneumatic tires, equipment gas headlights, Prest-O-Lite tank combination oil and electric side lights and glass wind shield Rambler spare wheel speedometer, jack and set of tools; body equipment 1 40 gallon chemical tank, with extra acid receptacle and holder, 200 ft. ¾ in. hose with nozzle, hose basket, 2 hand extinguishers, 1 12 ft. ladder, one 24 ft. extension ladder, complete set fire fighting tools, one gong.

RAMBLER TYPE A COMBINATION CHEMICAL AND HOSE TRUCK.

Chassis details and equipment same as for Type B. (Also furnished with Ambulance, Police Patrol and other Municipal Service bodies.)

Commercial Electric Public Service Cars.

Made by the Commercial [illegible] Philadelphia, Pa.

COMMERCIAL 8 PASSENGER BUS, $5[illegible]

Maximum speed, 15 miles per hour. Motor, General Electric, 22 amperes, 85 volts, 50 per cent. overload capacity, 42 cells of lead battery, weight, 1,175 pounds continuous torque controller around steering column, giving four speeds forward and three reverse; the Hindley spiral gear drive, the motor gearing, axle wheels, etc., being in one unit is used. Two sets of brakes, expanding on the rear wheels tires are solid 36 x 2½ front, 36 x 5 rear, steering wheel at the left frame of structural steel, front springs, ¾ elliptic, rear, semi elliptic; wheel base 90 in.

COMMERCIAL 12 PASSENGER BUS, $[illegible]50.

Motor, General Electric, 35 amperes, 85 volts, battery weight, 1,650 pounds, tires, solid, 36 x 3½ front, 36 x 4 rear white, base 1[illegible] Other chassis details are the same as the 8 passenger bus.

Three-Wheeled Delivery Vehicles

New Era Commercial Tricar.

Manufactured by the New [illegible] Autocycle Co. Dayton, O.

THE NEW ERA TRICAR.

Motor, 6 h. p., single cylinder, 3⅝ x 3⅝; two speed transmission controlled by levers or foot board; internal expanding brake acted upon by lever or foot board; wheel base 72 in., front wheel treads [illegible] in., wheels 26 in. in front and rear mounted on Timken bearings gasoline capacity 1½ gallons; [illegible] of 3 cubic feet; 24 in. long and 28 in. wide; doors open front and top, or both can be built to specifications magneto ignition frame seats 31 in. from ground.

Wagenhals Commercial Cars.

Made by the Wagenhals Mfg. Co., St. Louis, Mo.

THREE-WHEELED DELIVERY WAGON

Motor, 14 h. p., two cylinders, 4 x 5 opposed, planetary transmission, two speeds forward, direct chain drive to single rear wheel on second; jump spark ignition, frame of pressed steel wheels artillery type, tires 30 x 3 front, 30 x 3½ rear; body 40 runs full elliptic springs front, ¾ end scroll elliptic rear; 9 gal. gasoline tank.

Motorette Gasoline Commercial Cars.

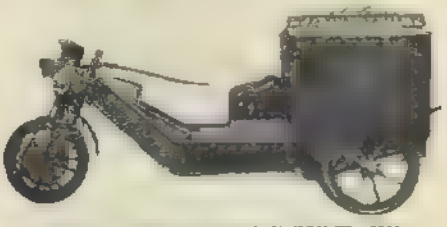
Made by C. W. Kelsey Mfg. Co., Hartford, Conn.

MOTORETTE MODEL L, PASSENGER OR 250 LB. WAGON, $475.

This is a convertible delivery car. Motor, 10 2-6 h. p. at 500 r. p. m. 2 cylinder water cooled 2 cylinders 3½ x 3½ [illegible] under hood, [illegible] jump spark [illegible] dry cell [illegible] extra plate storage transmission operated by foot [illegible] with [illegible] 2 speeds forward, tires [illegible] on [illegible] wheels, fitted with cast iron; 2 sets of brakes, expanding and contracting [illegible] on rear wheels and rear [illegible] tires 28 x 2½ rear tires 28 x 3 clincher rims steering [illegible] at the right front [illegible] frame of pressed steel [illegible] rear Motorette Special; 4 gal. gasoline tank under seat wheel base 71 in. equipment of lights, horn set of tools tire repair kit, pump and jack

Maxim Mobile Gasoline Commercial Cars.

Made by G. H. Bushnell Press Co., Thompsonville, Conn.



MAXIM MOBILE DELIVERY TRUCK, $390

Combination delivery and pleasure [illegible] Motor, 6 h. p.; two cylinders 3½ x 4, air cooled; jump spark ignition from magneto, sliding selective transmission, two speeds forward, direct drive on second; chain drive; cone clutch faced with [illegible] two sets of brakes expanding [illegible] drum also hand brakes, springs semi-elliptic front and rear, tires 28 x 2½ front and rear; wheel base 106 in.

Gasoline Commercial Cars

American Gasoline Commercial Cars.

Made by the American Motor Truck Co., Lockport, N. Y.

AMERICAN MODEL M, $3,250.

Express body; capacity 2 tons. Motor, 45 h. p., water cooled; four cylinders, 4⅛ x 5½, cast in pairs; power plant demountable; ignition by Bosch dual system, with two sets of spark plugs; leather faced cone clutch; three speed roller bearing transmission located in the middle; drive by chain, direct on third; two sets of brakes expanding and contracting on the rear wheels and jack shaft; tires solid, front and rear; steering wheel at the right; 16 gal. gasoline tank under seat; frame of armored wood, springs, front and rear, semi-elliptic; wheel base 132 in. Equipment of lamps, horn, tools and speedometer.

AMERICAN MODEL O, $4,750.

Stake body; capacity 5 tons. Motor 60 h. p., water cooled, four cylinders, 5¼ x 6, cast singly; the transmission may be either sliding or planetary as desired, rear tires are twin solid; rear springs, half platform; the gasoline tank has a capacity for 22 gals.; wheel base 130 in. Other chassis details are the same as Model M.

AMERICAN MODEL L, $4 000

Stake body capacity 3 tons. Any body may be had. The transmission may be either sliding three speed, or planetary two speed, as desired; rear tires are twin solid; rear springs, half platform, gasoline tank has a capacity for 22 gals.; wheel base is 130 in. Other chassis details are the same as Model M.

Adams Gasoline Commercial Cars.

Made by The Adams Bros. Company, Findlay, Ohio.

ADAMS MODEL B, $1,400.

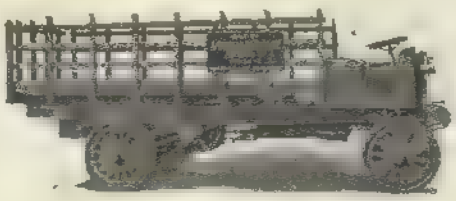
Panel delivery wagon; capacity of 1500 lbs. Motor, 2 cylinders 3⅜ x 5, cast en bloc, water cooled; ignition by Eisemann magneto with either single or dual system; leather faced cone clutch; three speed sliding selective transmission, located in the middle, drive by shaft; two sets of brakes expanding and contracting on the rear wheels, frame of pressed steel, springs front and rear semi-elliptic; tires 32 x 4½; wheel base 104 in. Equipment of lamps, horn, tools and motor driven air pump for tires.

ADAMS MODEL A, $1 000.

Express body, capacity one ton. Motor, four cylinders 3¾ x 5, cast en bloc, drive by chain, the brakes are located on the rear wheels and jack shaft; tires are 34 x 3½, either solid or dual pneumatic, wheel base 120 in. Other chassis details are the same as Model B, but the equipment does not include power air pump.

American LaFrance Gasoline Commercial Cars.

Made by the American LaFrance Fire Engine Co., Elmira, N. Y.



TYPE 6, AMERICAN LaFRANCE TRUCK, $5,000.

Body optional and extra, capacity 5 tons. Motor, 48 h. p., four cycle water cooled, four cylinders, 5½ x 6, cast in pairs; ignition by Bosch dual system with storage batteries; no clutch is used; hydraulic transmission operated by hand, located in the middle giving an infinite number of speeds; drive is by chain; one set of brakes expanding on the rear wheels; the hydraulic transmission may also be used as a brake; tires are block, 36 x 5 front, and 38 x 8 rear; the steering wheel is at the right; frame is of pressed steel; springs semi-elliptic front and rear; wheel base 140 in.

TYPE 5, AMERICAN LaFRANCE TRUCK, $5 000

Body optional and extra, capacity 1½ tons. Multiple disc clutch, bronze and steel discs used, sliding selective; ball bearings, three speed transmission is located in the middle, two sets of brakes expanding on the rear wheels, are used; front tires are pneumatic, 36 x 4½, rear twin pneumatic, 38 x 4½, on demountable rims; the steering wheel is at the right; gasoline tank at the rear. Other chassis details are identical with those of Type 6.

The American-La France Gasoline Hydraulic Truck

For more than forty-five years the American-La France Fire Engine Company has been recognized as one of the largest and most reliable builders of steam fire engines, hook and ladder trucks and heavy rolling stock for fire departments.

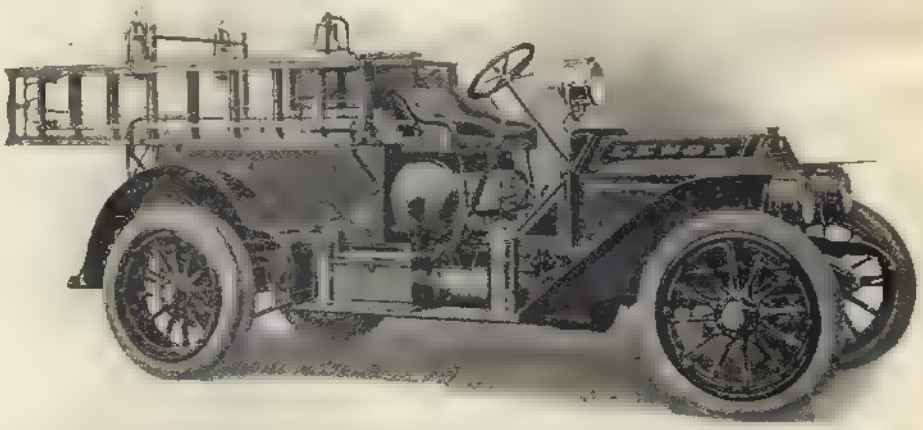
The service demanded of fire department rolling stock is extremely severe, and as the failure of fire apparatus might result in great loss of lives and property, the engineering and manufacturing departments of the company have been developed to the highest point of efficiency.

Some three years ago it became apparent to the company that horse drawn fire department apparatus would gradually be replaced by motor driven machines, and after a careful study of the various types of the best stock American-built touring car chassis, some of which were being equipped with fire department bodies, they determined that in order to withstand the severe service of fire duty, it would be necessary to design and build a powerful machine for this special service. Therefore, for more than two years the company's engineering staff has been making exhaustive studies of the best foreign and American practice in automobile construction, with the result that they are now manufacturing a special motor driven fire department machine, incorporating therein a powerful gasoline motor, all especially designed for hard service and high speeds; the frame, axles and other important parts of the machine being especially designed and constructed of the most approved materials used in the highest grade foreign and American built cars.

In the judgment of this company one point above all others, which has caused great expense and annoyance in the practical operation of the commercial truck, is the sliding gear transmission system generally employed in a gasoline driven truck. In hard and constant use, the gears are frequently broken, owing to the constant shifting of them necessary in the dense traffic through which the truck must move.

In order to overcome the serious objections to the sliding gear system used in the commercial truck, the American-La France Company has devoted the past two years to a painstaking study to devise some system of transmission, which they claim proves more efficient and economical than the system generally employed. As the result of careful engineering and exhaustive tests, they have adopted what is known as the Manly Drive or Hydraulic transmission, consisting of a system of a 5-cylinder hydraulic pump connected with two 5-cylinder hydraulic motors, thereby entirely eliminating the clutch.

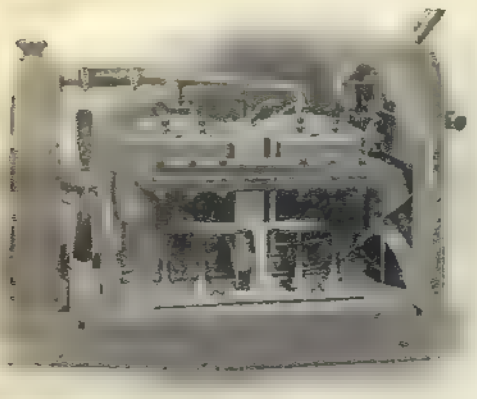
The main pump is so arranged that the stroke of same may be varied, whereas the motor pumps have a constant stroke. By the means of a single operating lever directly controlling the stroke of the main pump, the vehicle speed may be varied from 0 to 12 miles ahead and from 0 to 3 miles reverse. Not only does the operating lever control the vehicle speed, but by this



The American-La France Combination Chemical Engine and Hose Motor Car.

This car is powered by a four cylinder, 48 h p. (A. L. A. M.), four-cycle motor, 6½ inch bore x 6 inch s roke. The frame is made from a special alloy crucible steel, cold pressed and heat treated, and is 19 feet long 9½ in. depth of channel, with 3 in. horizontal webb. The body has a capacity of 1000 feet of 2½ in. hose and has a driver's seat with space for two men; also space for two men on the sides of the body and standing room for two men on the rear step. The equipment includes a 16 ft. solid side extension ladder mounted on side of body ten foot roof ladder mounted with folding hooks; locomotive bell; whistle; four lanterns; fire axe; door opener; two 8 in gas acetylene reflector lamps; one 9 in. Rushmore Searchlight mounted on dash; gas tank, tire pump and necessary tire tools; wrenches, etc. The front wheels are 36 in. in diameter, equipped with 5 in. single block solid rubber tires; the rear wheels are 38 in. in diameter with 9 in. solid block tires; the truck has a freight load capacity of 5 to 7 tons.

means the same operation has a braking effect inasmuch as the vehicle speed cannot be faster than the speed of the pump and motors will allow, the lever as stated above positively controlling the stroke of the pump. The wonderful simplicity and flexibility of the single lever control of this transmission is its strongest point.



Left hand side of the American-La France Motor. The water passages are large and so designed that the cooling water is taken in on the exhaust of hot side and discharge over the combustion chamber.

Another good point in its favor, however, is the efficiency of the system as compared with the sliding gear transmission, a series of practical tests having determined that the average of all the figures of efficiency shown by these tests computed numerically is 87.7 per cent, as against 75 per cent. under the most favorable conditions for the sliding gear system.

The transmission system employed allows running the motor at a fixed normal speed. While there is absolutely no loss in driving power when changing from one vehicle speed to the other as the power plant is never disconnected from the transmission system.

The hydraulic transmission is operated with oil thereby securing perfect lubrication without attention, and as the system is entirely enclosed it is foolproof and in the hands of an inexperienced operator cannot be damaged. The torque or pull power increases in direct proportion as the vehicle speed decreases.

In fact, the vehicle speed control and the brake action, all combined in one system and under the control of one small operating lever, form a unique combination, which established this transmission in a class of its own.

The Motor.

The power plant consists of a 4-cylinder, 4-cycle water cooled gasoline motor, bore of which is 5½ in., stroke 6 in., developing 48 h. p. (A. L. A. M.) The cylinders are cast in pairs of the finest selected grey iron, with offset inlet and exhaust valves on opposite sides. The cast-iron pistons are machined and ground to gauge, and grooved to take four cast-iron piston rings. The piston pins are of hollow steel, hardened and ground, and are held in place in the piston by a locking bolt. The length of piston-pin bearings, 2½ inches; diameter, 1¼ inches. The valves are forged in one piece of nickel steel, turned, and accurately ground to same size, and lapped into taper-valve seats. The inlet and exhaust valves all on opposite sides of motor, mechanically operated. All valves and valve springs are interchangeable. The valve-lifter guides are die cast, and the valve lifters are of steel, turned, hardened, and ground. The design of the valve lifters allows provision for adjustment by means of a set-screw with lock nut. By this means a perfect timing of valve lift is obtained. The lifters are made in two pieces, the top half being held up against the lower end of valve stem by a spring, and the lower half riding upon the cam shaft. By this design the strike of the cam, as it raises the valve, takes place in the valve-lifter guide, giving a quieter running motor and preventing any particles of dirt or grit from lodging between the valve stem and valve lifter. A copper cap covers the valve-lifter guide, keeping out dirt or foreign matter. The valve lifters with guides, cap,

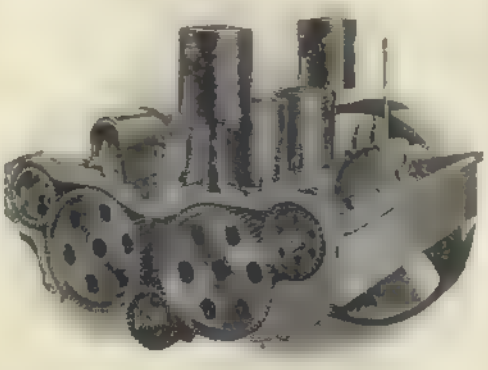
Right hand side of the American-La France Gasoline Motor, showing the accessibility to carburetor, magneto and lower end of steering apparatus. The cylinder dimensions are 5½ in. bore and 6 in. stroke. The motor is rated at 48 h. p. (A. L. A. M. rating) assumed at a piston of 1000 ft. per minute, while on brake test it develops an actual 70 h. p.

and spring are interchangeable for both inlet and exhaust. The diameter of inlet and exhaust valves 3½ inches.

The water passages, integral with cylinder casting, are large, and so designed that the cooling water is taken in on the exhaust or hot water side of the motor and discharged from the top over the combustion chamber. The water-jacket covers on top of the cylinders provide a large space for cooling

water, and form an outlet to radiator. The covers may be readily removed for inspection of cylinder castings. The gear-driven centrifugal pump is mounted on the motor crank case. The pump body is of aluminum with bronze propeller and solid nickel shaft.

The crank case, an aluminum casting, is made entirely in one unit and provided with numerous ribs giving added strength without excess of weight. The bottom half, or oil pan, may be readily removed for inspection of main bearings and connecting rods, and is arranged with semi-circular channels to catch any dirt or foreign matter. Each channel is provided with drain cock, to allow withdrawal of dirty oil.



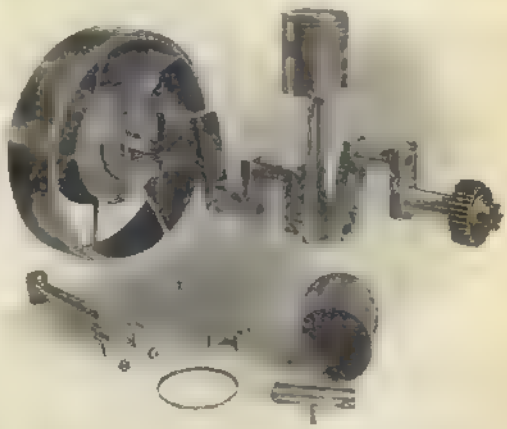
A general view of the motor with cylinders removed and gear case cover taken off.

The crank shaft is machined from solid billet nickel steel, heat treated, and all bearings are accurately ground to size. The crank shaft and connecting-rod bearings are of special bearing metal; large, affording ample bearing surface. Number of bearings, three. Length of front and rear bearings, 4 inches. Length of center bearings, 3¼ inches. Diameter of shaft at bearings, 2⅛ inches. All bearings are provided with oil grooves. The crank shaft with the fly wheel attached is balanced, and the weights of the connecting rods and pistons are uniform.

The connecting rods of drop-forged I-section, special heat-treated steel. The connecting-rod cap is drop forged integral with the rod, the connecting-rod ends are drilled, reamed in jigs and the cap is then milled from the connecting rod in a special fixture, which insures all rods being interchangeable. The design and proportions of the rod and the material used in its manufacture insure it against any strains that could possibly arise. The length of the connecting-rod bearings, 3¼ inches, and the diameter of connecting-rod bearings, 2⅛ inches.

The cam shafts are machined from solid bar with integral cams, hardened and ground to absolute accuracy. The half-time gears are drop forged of special steel, have a face-width of 1½ inches, and the teeth are of a fine pitch. This gives a very quiet running gear with good bearing surface, insuring long wear. The gears driving the magneto and centrifugal water-pump are located on opposite sides of motor, meshing with the half-time gears. These are interchangeable and are carried on like shafts supported on two widely-spaced annular ball-bearings. All gears are enclosed in an oil tight extension crank case. Keyed to the end of the inlet cam shaft is a bevel gear for driving the oil pump, while the exhaust cam shaft is arranged with a compression relief.

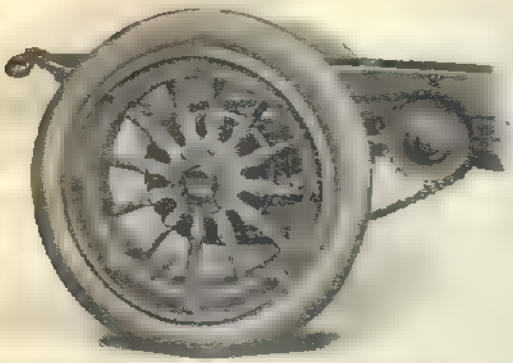
The carburetor is of the float-feed type, automatic auxiliary air intake, water-jacketed. The gasoline tank of 22 gallons capacity underneath body at rear of chassis feeds the gasoline under pressure by means of an exhaust pressure regulator and a hand-pump located on dash. The tank is of heavy copper, riveted and divided by wash plates. A large filling-spud permits of filling the tank with ease and quickness, and gauging the amount of gasoline in the tank at any time. A pressure gauge is located on the footboard indicating the air pressure on the tank and a hand-pump is provided to supply pressure to tank when motor is not running.



Disassembled views of the crank shaft, fly wheel, piston and connecting rod. The crank shaft is machined from a solid billet of nickel-steel, the front and rear bearings are 4 in. in length while the centre bearings are 3¼ in. The diameter of the bearings is 2⅛ in. Connecting rod bearings are 3¼ in. long by 2⅛ in. diameter.

Ignition System.

Ignition is by jump spark, Bosch high-tension magneto dual ignition system, dual coil with double throw switch and starting button mounted on dash. All wiring from coil to magneto is thoroughly protected and enclosed in a single tube. The wiring from magneto to spark plug is carried in a single tee-shaped tube, insuring perfect protection from short circuit.



Side view of the chain drive. Chains are roller type, 1¼ pitch, ⅝ in. roll. The driving sprockets are made from drop forgings, and the brake drum and rear sprocket is a single pressed steel forging bolted to spokes of the rear wheel by 12 bolts.

Lubrication.

An oil tank of one gallon capacity located between cylinders supplies a mechanical oiler with sight feeds and feed regulator, mounted on dash, positive pump type with no valves, springs, etc., to get out of order, gear driven from motor, pumping oil to motor crank shaft bearings and to cam shaft front bearings. The motor is also partially splash lubricated. Two level cocks, one on each section of the oil pan, furnish a means for testing oil level in crank case. The mechanical oiler maintains constant oil level in crank case. The oil pan is also equipped with four drain cocks for draining oil entirely from crank case when it is desired to replenish with a new oil supply. The oil tank has a gauge glass and filling connection on top. The motor-breather pipe runs through the tank, keeping oil warm while engine is running.

Steering Gear.

The steering gear is of the non-reversible worm and gear type. The steering shaft and worm of one-piece construction, machined from solid upset bar of special steel. The entire mechanism is enclosed in an oil-tight aluminum case, and two ball bearings are provided to take up the thrust from the worm shaft. Adjustment of these bearings is provided to take care of any wear. The gear is drop forged integral with its shaft, and the shaft end is squared to take the drop-forged steering lever. The hand-wheel is 18 in. in diameter, aluminum, hard rubber covered with serrated inside edge, giving a firm grip.

Chain-Drive Construction.

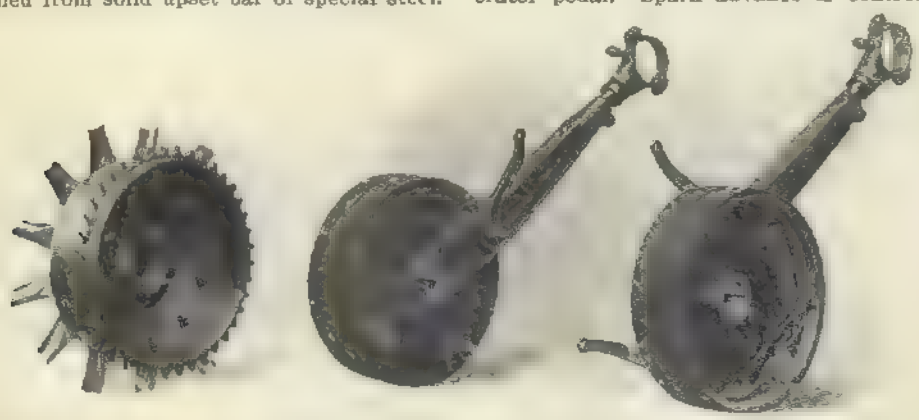
Double side chains from jack-shaft sprockets to rear-wheel sprockets. The chains are of roller type, made of special steel and practically noiseless. Pitch of chain, 1¼ inches; diameter of roll, ⅜ inch; width of roll, ⅝ inch. The driving sprockets are made of finest grade steel drop forgings, and keyed to the jack shafts. The brake drum and rear sprocket, a single-pressed steel forging, is securely bolted to spokes of rear wheel by 12 bolts. The radius rods are of steel, supporting the brake cams and pivots, and are adjustable to take up any stretch in the chain.

Brakes.

Foot brake, internal expanding brake in drums attached to rear wheels and operated by foot pedal. Emergency brake operated by hand lever, also expanding rings, against inner surface of brake drums on rear wheels, provided with notched sector to lock the brakes in set position when desired. Both brakes are fully equalized. The drums are 14⅜ inches inside diameter; rings, 14¼ inches diameter by 2-inch face, covered with raybestos. Both foot and emergency brake rings acting on inside of brake drum, affording the great advantage of protection against dirt and water. Accessible grease cups are provided for the brake cam-shaft bearings and radius rod bearings.

Control.

The throttle valve is controlled by a hand lever at steering wheel and by foot accelerator pedal. Spark advance is controlled



Three views of the brake and radius rod construction. On the left is shown a brake drum and sprocket while the other views show the Raybestos covered brake rings and brake rods attached to the radius rod. The drums are 14⅜ in. inside diameter by 2 in. space.

by a lever on steering wheel. In both throttle and spark advance controls, the rods are fitted with adjustable ball-and-socket joints, doing away with any lost motion.

Springs.

Semi-elliptic springs are fitted front and rear. Front, 2 inches wide x 36 inches long; rear 2½ inches x 52 inches long; having ample carrying capacity and made of special stock and designed to stand fire service. All spring plates are lipped on both sides to maintain alignment. Shackle bolts are provided with patent grease cups.

In line with the careful engineering and high class material used in the construction of this truck, this company is the only one using a special bent steel frame similar to the frames used in high class pleasure cars, except the dimensions of the truck frames are, of course, very much larger. This frame is made from a special alloyed crucible steel, cold pressed and heat treated, and is 19 feet long, 9½ inches in depth of channel, with 3 inches horizontal webb.

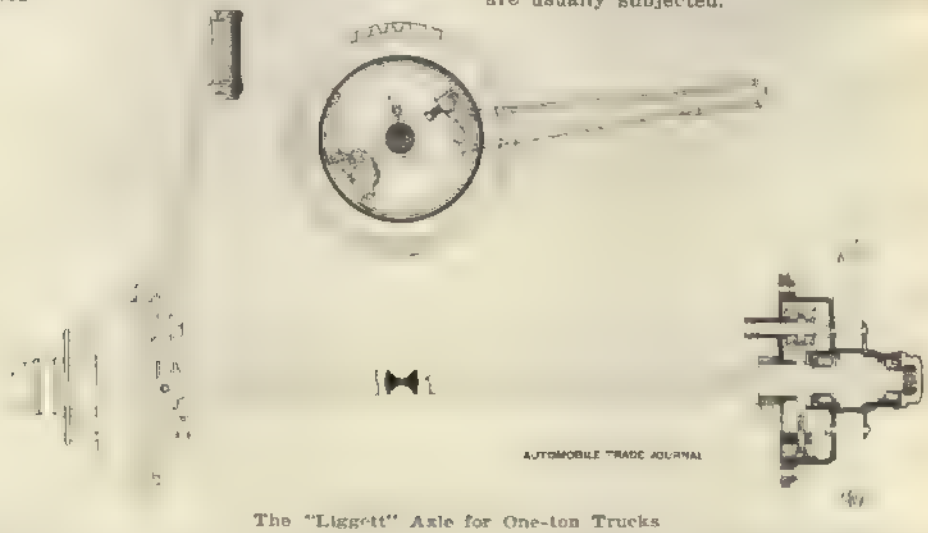
The front wheels of the truck are 36 inches in diameter equipped with 5 inch single block solid rubber tires; the rear wheels are 38 inches in diameter with 9 inches single block tires.

This massive truck is 19 feet long over all and has a freight load capacity of 5 and 7 tons.

A NEW AXLE FOR ONE TON TRUCKS

The new one-ton truck axles shown by the accompanying cut are the latest product of the Liggett Spring & Axle Company, Pittsburg, Pa. It represents one step in advance in the design of double chain drive axles

rear of the hubs, steel washers are fitted to serve both as dust caps and grease retainers. The well-known Liggett Roller Bearings and internal brakes are amply proportioned in these new axles to provide for the severe abuse to which the light motor trucks are usually subjected.



The "Liggett" Axle for One-ton Trucks

The bed is of I-beam section and is produced from a solid billet of special steel without welds and without the use of drop hammers. The hub and brake drum is an integral steel casting and the detachable sprockets are machined from a high carbon steel plate by means of specially designed machine tools for economical production.

Strut rods, of I-beam section, are arranged to absorb the brake torque by their being pivoted on the bed of the axle and being locked to the brake spider. An adjusting sleeve so designed as to permit chain adjustment without disconnection from the jack shaft, turns in the long bearing at the end of the strut rod. This form of fastening compensates the uneven riding height on the two rear wheels and eliminates all wear on the threads of the I-beam. At the

MILITARY MOTORS URGED

At the suggestion of Lieutenant-Colonel Littell, quartermaster of the Department of the East, a board of officers has been appointed to investigate and report upon the value of automobiles for military purposes. Lieutenant-Colonel Littell has been much impressed by the behavior of motor trucks in hauling food and other suplies at maneuvers, and in advocating the use of an extensive motor equipment he suggested a lathe, drill and other repair tools as a part of the field equipment.

Major-General Grant, Commander of the Department of the East, also strongly advocates the employment of military motors and has urged the war department to consider a plan for the subvention of all such machines as, in a critical time, could be employed for the transportation of troops.

CROCKER WINS 100-MILE EVENT

Driving his Twin Indian at a terrible pace for every one of the hundred laps in the 100-mile free-for-all race at the Omaha Speedway July 4th, H. Crocker won in the time of 1 52.10. With the thermometer at 105 and a hot wind full of stifling dust, racing was anything but pleasant. Henry Brown, who was riding his Indian like a whirlwind, lost his goggles and as soon as the dust filled his eyes he lost control of his machine and went flying over the embankment. He got up and declared his intention of re-entering the race but the condition of his machine prevented it.

In the ten-mile event, which preceded the 100-mile race, Mulmquist won in 10 18 on his twin cylinder Indian. The 100-mile race was made up of four different races, all run at the same time. The professionals on single and twin machines started only fifteen minutes after the amateurs, who were also entered into two classes according to cylinder measurements. Crocker, who won the amateur race in the twin cylinder class, and also made the best time of the day, rode a beautiful race, doing many laps at a mile-a-minute pace. J. Huth, Indian lost the amateur twin cylinder class by five minutes. The single cylinder amateur class event was captured by W. Wilson, on an R. S. in 2.18. Among the professionals, Kubler, Indian, won first in the single cylinder class, and Louis Fletcher won the twin cylinder event, and was the only one to finish. Charles Peterson, a 16-year-old boy, was heartily applauded for the hearty race he put up on a Yale. He won a diamond ring as first prize for the private owner single cylinder class.

TEUBNER STARS AT TOLEDO

Nine events made up the program of the Toledo M. C. Races, held in Toledo, O., and which were witnessed by a large crowd of motorcycle fans. The events were pulled off without delay, which speaks well for the able management of the Toledo M. C. officials.

Teubner, Merkel, won first in every event he entered, and the way he took the turns made a person's hair stand on end. "Shorty" Mathews, Thor, was second to Teubner in every event except one, when he broke an exhaust valve. Fred Rath, Indian, won two gallons of steam engine oil and was made the subject of much kidding by Klark and Hart. A. W. Happ, Thor, of Toledo, annexed three firsts in the 30.50 class for stock machines. A. B. Coffman, of the Consolidated Manufacturing Company, acted as starter. After each event the starter escorted the winners to the prize custodian for their prizes.

The Motorcycle Exchange, of Atlanta, Ga., has been appointed agent for the Marvel Motorcycle in its territory

The accompanying photograph shows Mr and Mrs. M. E. Gale, of Angola, N. Y., mounted on their tandem rigged twin Emblem. The seating arrangement consists of two seats side by side, each being on the side of the main frame. This rig attracted considerable attention during the F. A. M. meet. It might appear that such a seating arrangement would materially affect the steering of the machine, but we are informed that Mr. Gale can handle the same with considerable ability, which is proven by the fact that on July 4th the couple rode the machine a distance of 320 miles in one day which is going some.

The Rochester Motorcycle Club, of Rochester, N. Y., has recently been incorporated under the laws of the state for the purpose of "obtaining and enforcing just laws regulating the use of motorcycles, to influence public opinion favorably towards motorcyclists, to promote touring and racing, to provide social entertainment, to collect road information and to act as a clearing house for matters of interest to motorcyclists."

The directors are Joseph A. Ochs, H. Geo. Hammon, George J. Wagner, Arthur Strobel, John C. Kurtz, Charles P. Strongen, William J. DePre, Arthur R. Roland, Edward Stauger

The above photograph shows Wm. Streiff who so successfully completed the trans continenta. trip from San Francisco to New York last fall and who sailed on the "Olympic" last June for London, England. He intends to tour entire Europe on the same machine he used on his trans continenta. trip, and will gather interesting photos and data of his varied experiences on the European continent.

DAVIS CROSSES CONTINENT IN TWENTY DAYS

After suffering many hardships and at one time lying unconscious for two hours, Volney E. Davis, captain of the San Francisco Motorcycle Club, reached New York City, July 16. He left San Francisco at 12.30 A. M., June 26, and reached the New York City limits at 12.21 P. M., making the actual time since leaving the coast twenty days nine hours and one minute. About ten hours a day, or 200 hours in all, were spent in the saddle. After a month's rest Davis will start the return trip

SIX FINISH SAN FRANCISCO TO AUBURN ENDURANCE RUN

The endurance run held July 4th from San Francisco to Auburn and return, resulted in six perfect scores. The race was one of the most successful of its kind held in California, and the finish was witnessed by a large crowd who were there to greet the successful competitors. Thirty-six riders started, and less than 20 per cent. of them were successful. Various causes compelled twenty-nine of the entrants from making perfect scores. The distance covered was 423 miles. The first of the riders left Auburn at 5 o'clock on the morning of July 3d the first of them arrived at San Francisco at 4 45 P. M.

RICHMOND MOTORCYCLE MEET

On July 4th the Richmond Motorcycle Club held its first meet, at which only local riders participated. Over two thousand people witnessed the performance, and it is said that more would have been present had it not been for inadequate car service. The meet was held on the one-mile dirt track at the Driving Park. There were no track accidents, although the grandstand collapsed during the races and slightly injured several persons. One of the contestants was hurt in the fall of the grandstand and had to withdraw. Summary follows

Five-mile handicap—Smith, 4 [illegible] p Excelsior Time 6 [illegible] Ten mile [illegible] 7 h p cycles—McBride, Excelsior [illegible] 12 6 4 5 Three-mile, [illegible] 5 h p [illegible] Smith, Indian Time, 57 Three-mile, [illegible] p cycles—Smith, Excelsior Time [illegible] Mile against time Smith, 6 h p Excelsior [illegible] Tangeman, 7 h p Indian Time 1 [illegible] Five-mile, [illegible] 4 h. p. cycles Smith Excelsior Time, 6 29 Ten-mile handicap, for 5 6 and 7 [illegible] p cycles—Tangeman 7 h p. Indian. Time, 11:48 Eight-mile handicap, 4 h p and under—Baker, 4 h p. Yale Time [illegible] Pursuit race fourteen entries—Won by Tangeman with a 7 h p. Indian

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EXCELSIOR SUPPLY COMPANY, 22nd and Union Streets, CHICAGO, ILL.

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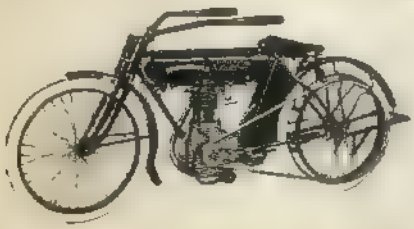

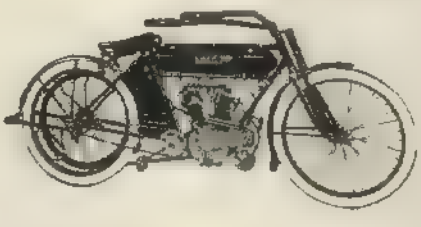

1911 YALE Motorcycles

The steady increased sale of the 1911 Models is the best evidence we can offer that Yale Motorcycles are best and that the word Yale means QUALITY in every sense of the word, and QUALITY COUNTS.

We are closing agencies every day with pioneer dealers who have been through the mill and know.

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We also make Yale and Small Bicycles, Hussey Handle Bars and Drop Forgings of every description.

PRESIDENT TAFT WITNESSES INDIANAPOLIS RACES

More than 25,000 persons watched the motorcycle races held under the auspices of the Indiana Motorcycle Club at the State Fair grounds, July 3 and 4. Among the most enthusiastic onlookers on the second day of the race was President Taft, who witnessed several of the events and personally congratulated Erwin G. Baker and John Sink after their match race, which was only decided at the tape, Baker winning by a foot. The events were all run according to schedule time. The hour race which was delayed by a head-on collision was not finished until 6.40. E. G. Baker succeeded in smashing the record for the five and ten-mile distances, and covered one of the intermediate miles in the fast time of 57¼ seconds, beating Huyck's time for the mile, which was 57 2-5. The track was in bad shape, and was covered with dust several inches deep, which at times obscured the riders

On the second day Baker, during what was called the President's Race—a five-mile match between Baker and Sink, established a new track record, of 5 00 2-5. There was only one accident on the opening day, when in the third event Ray Hoffsetter's machine blew out a tire. Marshall, of Terre Haute who was directly behind him, was unable to clear him and struck the latter's rear wheel Marshall was painfully injured and was taken to the City Hospital. Hoffsetter suffered a number of bruises. On the second, also in the third event L. S. Taylor, of Columbus, O., skidded with his Emblem, and smashed into the fence. He was on his feet quickly and removed his machine from the track. He was badly bruised but not seriously hurt.

Casebeer, in the private owners' class showed up well. He won three five-mile events

Monday's summaries:

Five miles, private owners, stock, 30.50 class—Gollnisch, R-S, Vogel, R-S, Melle, Indian Time, 6 30. **Five miles, open, 50.00 class**—Jones, Thor; Stewart, Indian Marshall, Indian Time, 5 48 2-5. **Ten miles, open, 61.00 class**—Baker, Indian, Sink, Merkel Taylor, Emblem. Time, 10 23. **Five miles, stock, 30.50 class**—Stewart, Indian; Vogel, R-S, Melle, Indian Time, 6:17. **Five miles, open, 61.00 class**—Baker, Indian; Sink, Merkel; Taylor, Emblem Time, 6:12 2-5. **Ten miles, stock, 61.00 class**—Baker, Indian; Jones, Thor; Stewart, Indian Time, 11 11 2-5. **Unlimited pursuit, open, 61 00 class**—Baker, Indian, Sink, Merkel. Distance 22½ miles

Tuesday's summaries:

Five-mile, stock belt machines, 30.50 cu. in or under—Noble Shepherd (Merkel), first, H Gollnisch (Reading Standard), second; Vogel (Reading Standard), third Time 6.25 **Five-mile, stock chain machines, 50 cu. in or under**—Forrest Casebeer (Indian), first; Ocie Jones (Thor), second; John Ellis (Thor), third Time, 5 50 **Ten-mile, open, 61 cu. in. or under**—Erwin G. Baker (Indian), first; John Sink (Merkel), second. Time, 10 16 3-5. **Mile time trials, open, 61 cu. in. or under**—E. G Baker (Indian), first, J. Sink (Merkel), second. Time, .58 1-5 **Five-mile open, 50 cu. in. or under**—Casebeer (Indian), first; Stewart (Indian), second Shepherd (Merkel), third. Time, 5:41 2-5. **Five-mile, private owners, 50 cu. in. or under**—F Casebeer (Indian), first; Adams (Excelsior), second; Melle (Indian), third. Time, 6 58 2-5 **President's race, five-mile match between Baker on Indian and Sink on Merkel**—Baker first; Sink, second. Time, 5.00 2-5. **One-hour race, open, 61 cu. in. or under**—John Sink (Merkel), first, Baker (Indian), second. Distance, 59 miles

COMING MOTORCYCLING EVENTS

August 1 Springfield, O. Race meet

August 1-4—Summer meeting Cycle Parts and Accessories Association, National Association of Cycle Jobbers, and Motorcycle Manufacturers' Association, Atlantic City, N. J

August 6—Detroit, Mich. M C. race meet

August 6—Worcester (Mass.) M. C., endurance run to Rockport and return, 200 miles

Aug. 14-19—A. C. U six-day trial, Harrogate, Yorkshire, Eng

September 2 Akron, O. Race meet

September 4—Canton (O.) M. C. race meet.

September 4—Cedar Rapids (Ia.) M. C. race meet.

September 4 Detroit (Mich.) M C. race meet

September 4—La Salle, Ill. Illinois Valley M C races

September 4—Springfield, O. Labor Day race meet, eight events

September 17 New York, M. T C. of New York third two-trial, Newburg and return, 150 miles. Open

October 1 Worcester (Mass.) M. C. endurance run to Springfield, Boston and return 200 miles

January 6, 1912 New York show at the Madison Square Garden

CHAPPLE LOWERS TRACK RECORD

A. C. Chapple, of the Merkel racing team, lowered the track record at the Rockford, Ill., driving park on July 4th. He clipped 3 3-5 seconds from the old mark of the course. His best mile was made in 57 3-5 seconds.

George Van Nortwick, of Oakland, Cal., rider of a Pierce single cylinder motorcycle, who earned a silver medal at the San Francisco Endurance Run. Tire trouble prevented him from receiving a perfect score The run covered a distance of 423 miles, part of the road being impassable for automobiles

M should be made smaller, so as to create more interest in the work as laid out by the vice-presidents

Mr. Willis also suggests that the secretary and president should be remunerated with a nominal salary, which would be his actual expenses. Although Mr. Willis has served without remuneration either for personal or office expenses, save that of postage and stationery, he claims that the increased amount of work which the office now requires makes it only fair that the president should be stipulated with a salary. In closing his report, he states that the two years of work have been a pleasure to him, and he trusts profitable to the association

Mr. Willis, who has retired from the office of president, has been succeeded by George H. Hamilton.

HAMILTON ELECTED PRESIDENT

George H. Hamilton, of New York, was elected president of the F. A. M. at the ninth annual convention at Buffalo, N. Y. Aside from the election of officers, which included the re-election of Dr. G. B. Gibson, of Westboro, Mass., as secretary-treasurer, the most important action of the convention was that of changing federation districts by increasing them from four to eleven. The new districts, states included, and the new vice-presidents who will preside over each, follow:

New England: L. F. Mann, vice-president, Boston, Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut Atlantic: Dr. C. W. Lasalle, Rochester, New York; New York, New Jersey, Pennsylvania, Maryland, Virginia, West Virginia, Delaware and the District of Columbia. Lake district P. B. Whitney, Chicago, Ohio, Indiana, Illinois, Missouri, Wisconsin and Michigan. Peninsular district, J. W. Anderson, Elizabeth City, N. C., North Carolina, South Carolina, Tennessee Georgia, Florida and Alabama. Gulf district J. B. Coblenes, Louisville, Ky., Arkansas Louisiana, Texas, Kentucky, Mississippi, Oklahoma and Indian territory. Southwestern district A W Green, San Francisco, Nevada, Utah, Colorado, New Mexico and Arizona. Central district Dr. B. J. Patterson, Rexford, Kansas Minnesota, North Dakota, South Dakota, Nebraska, Kansas and Iowa. Pacific district: E L. Moore, Seattle; Wyoming, Montana, Idaho, Oregon and Washington. Insular district Philippine islands, Porto Rico and Hawaiian islands. Canadian district All Canada. Mexican district: State of Mexico

PROSPECT PARK MOTORCYCLE RACES

Over 3500 people witnessed the bicycle and motorcycle races at the letter carriers' picnic, at Prospect Park, Baltimore, Md., on July 4th. One of the features of the event was the winning of the five-mile motorcycle exhibition race by Miss Sylvia Michel, Maryland's Motorcycle Maid. Her complete mastery of the machine, and the easy manner in which she took the curves brought forth hearty applause from the spectators. When she overtook A. W. Rupp in the Australian pursuit race, the applause was thunderous. Miss Michel is only 17 years old but can give members of the sterner sex some points on riding.

Pop Allard, the old veteran, met with an accident, which may disable him for some time. He suffered a badly lacerated foot and his right side was bruised. He dashed through the fence and was knocked senseless. Frank Fertiga also took a spill and fell heavily. Fast time was made in the novice race, and the two-mile handicap was also spectacular and produced time fast. The four corner Australian pursuit race was the day's feature, so far as thrills were concerned. A feature that appealed to riders was the free distribution of oil and gasoline by the management

BOSCH ON ALL WINNERS

We are advised by the Bosch Magneto Company, of New York City, that all winners and those to receive a position in the annual meet promoted by the Auto Cycle Union, and held on the Brooklands Track recently, were equipped with Bosch magnetos.

CONTINENTAL MOTORCYCLE GRIPS

A 1912 product of the Continental Rubber Works, of Erie, Pa., is the motorcycle grip which we illustrate. This grip is made with an inner lining of fabric throughout, which makes the grip especially tough and strong. With this construction it is impossible for the grip to break off at the end of the bar. Naturally, the relief part of the grip, which is not supported by the bar itself, is subject to considerable strain, and in this grip the makers have built up several plies of fabric to take care of this.

Continental Motorcycle Grips.

It is impossible for the end of the bar to cut the grip, as the grip at this point is of solid fabric. The rubber is soft and resilient, and it has not been necessary to use a stiff, hard stock as the fabric gives the grip the strength and firmness otherwise produced.

Grips are packed in a neat, attractive box, containing one pair, and for quantity orders special labels can be printed if desired.

Prices will be sent on application to the manufacturers

KISSELKAR

1912

Every Inch A Car

The 1912 KisselKar line embraces features that are different, that mean greater motoring comfort, as well as economy of purchase price and operation for the car owner, and selling advantage for the dealer.

The 60 H. P. "Six" (fully equipped) $3000

Here is a car and price unique in the whole history of the industry. Why should any car buyer pay $3000 or more for a four cylinder car when $3000 buys the higher powered, roomier, more aristocratic KisselKar "Six" and the supremacy of the "Six" is undisputed? The KisselKar "Six" has 132 in. wheel base, 37 x 5 tires, and in the seven passenger or the stock bodies it is generously commodious—in every specification and detail it is a superior type of automobile.

Semi-Touring Body

This is a special KisselKar type of body. It is a modification of the touring body. It is light to afford handiness of control, tire and fuel economy like the Baby Tonneau, but, unlike the Baby Tonneau type, it is not "pinched" for room in either compartment. It is liberally roomy for five passengers—the ideal type of body for combination town and touring service

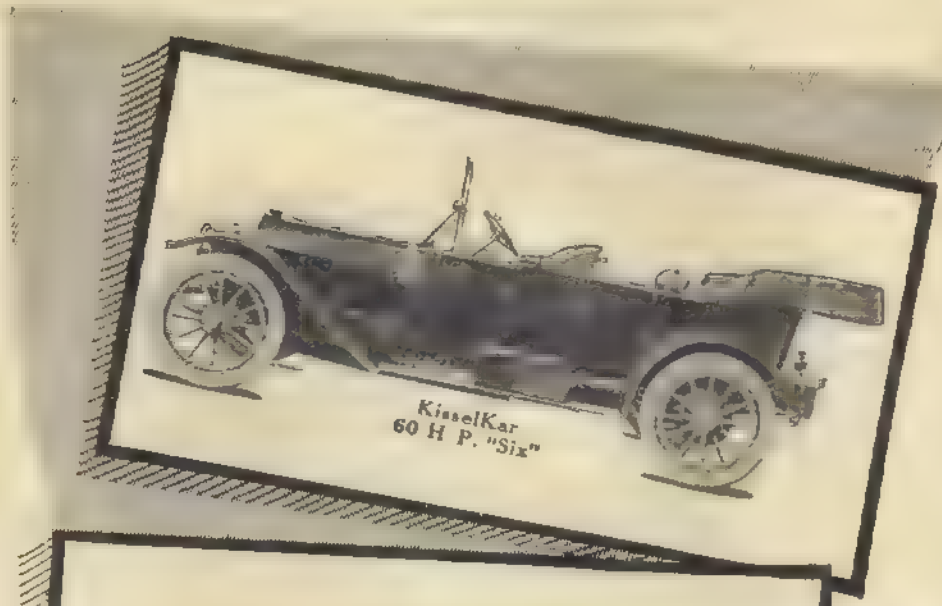
30 H. P., $1500 40 H. P., $1850 50 H. P., $2350
60 H. P. "Six," $3000 -1½-2 Ton, 3, 4 and 5 Ton Trucks, Delivery Wagons, etc.

Except the "Thirty," KisselKar Prices include full equipment, speedometer, detachable rims, etc.—everything essential to a perfectly appointed car.

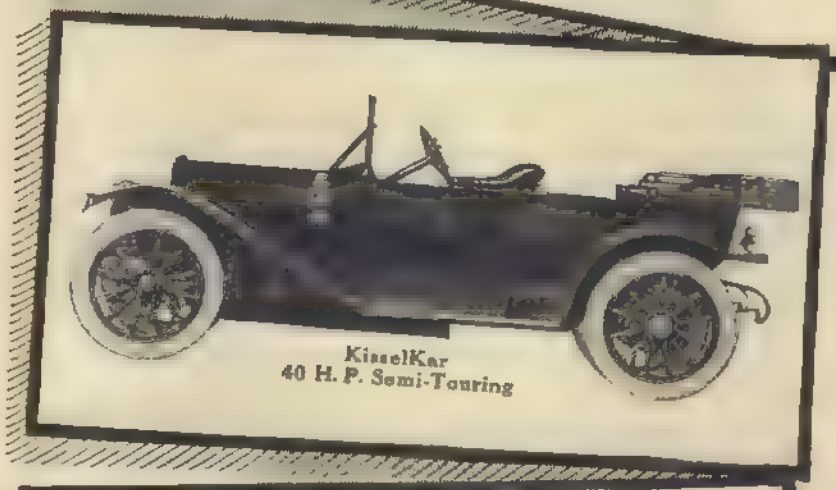
SEE the KisselKar—**RIDE** in the KisselKar—**INQUIRE** about the KisselKar. *Write for our* 1912 *portfolio.*

Enlarged factory facilities enable us to establish a limited number of new agencies. If you are a responsible dealer, write us on your letterhead.

KISSEL MOTOR CAR CO.
120 Kissel Ave., Hartford, Wis.



KisselKar
60 H. P. "Six"



KisselKar
40 H. P. Semi-Touring

KisselKar
30 H. P. Semi-Racer

Touring
Semi-Touring
Semi-Racer
Coupe
Limousine
Bodies

FIRST ANNOUNCEMENT OF THE 1912 EVERITT

The Car that has Bridged the Gap between TWO WONDERFUL MODELS---A VERY FINEST MATERIALS

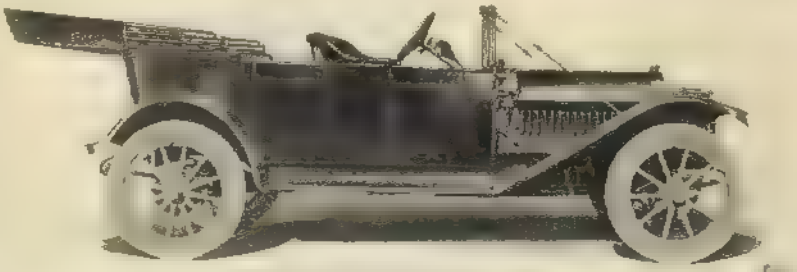
For more than eleven years the builders of the Everitt have manufactured successful cars. Their names are famous wherever automobiles are known Their cars—by the tens of thousands—are running today in every corner of the world, each new model a little better than the last, and nearer the ultimate perfection sought from the start.

Two years ago "The Everitt" was first brought out. It leaped into prominence in a moment Gradually new [illegible] its features [illegible] focused experience of three great makers and a hundred dealers, manufactured throughout in a single factory by a wonderfully exact

The 1912 SIX-CYLINDER Everitt

6-Cylinder 48-H. P., Long-Stroke Motor (Chrome Nickel Steel throughout) 36 x 4-inch Tires Demountable Rims, Cellular Radiator 120½-inch Wheel Base Everitt Self-Starting Device, Top, Windshield and Speedometer included Dual Ignition Manufactured complete in one factory.

Price, $1850



DELIVERIES AFTER JULY 15th

The First Chrome-Nickel Steel Car Ever Offered at a Moderate Price

In planning the New Everitt instructions were given to William Kelly—that dean of automobile engineers—to produce the very best that his great experience, judgment and ability knew.

Desirable proven features were adapted to the new design. A hundred details were improved, strengthened, simplified

The motor—already a whirlwind of power and a marvel of simplicity—was given a full third more power

Then it was seen that one more barrier separated this car from the $4000 quality.

The one great intrinsic difference was in the steel. Like other good automobile manufacturers, we had been using selected "open-hearth" or "carbon-steel" There is one thing immeasurably better—but far more costly, the price-ratio being about four to one. As compared with common automobile steel, its value is as six to one. It is "Chrome-Nickel" Steel

On the word of a great steel expert, no car in the world selling below $3000 uses an amount of chrome-nickel steel equal to the Everitt.

The Everitt Six

The Six-Cylinder type is now regarded as the very highest development of automobile building. It has long been considered the special province of high-priced builders.

The Everitt self-starting device

Both the Everitt "Six" and the Everitt "Four-36" will be equipped, at their respective prices of $1850 and $1500, with the Everitt self-starting device. The Everitt "Four-36" is the first four-cylinder car of moderate price to have such an equipment

In the New Everitt Chrome-Nickel Six we present a car which has no competition below $3000.

No one who has ever driven a "Six" will question the remarkable efficiency, power and smoothness of operation offered in this type. There is an overlap of power-impulses and a consequent smooth flow of energy as uninterrupted as the flow of water from a pipe

There is no vibration in an Everitt "Six", no gear-changing in traffic or on a hill, no lack of speed or power for an emergency. Note the size, power and equipment of the Everitt "Six." Never has so great a value been offered in any car

The New "Everitt Four"

In the New Everitt "Four" is presented one of the most desirable medium-sized Touring Cars at any price. Larger and more powerful than the 1911 model, it represents the best ideas of keen engineers who have followed automobile development for eleven years.

The motor—rated as "36" has shown 46 actual horsepower for a long continued brake test. The body lines have been greatly improved and beautified. Larger Tires and Demountable Rims have been added, and the Everitt self-starting device and a Top Windshield and Speedometer are included as standard equipment.

You are invited—urged—to compare the New Everitt "Four" and "Six" with what you consider the best cars of their type, regardless of cost.

The Everitt 30 for $1250

(Top and Windshield included)

The success of the standard "Everitt 30" has been so marked that at the new price of $1250 this car is bound to be one of the big sensations of the season.

In appearance, size and power it will be practically unchanged except for refinements and improvements. By the great saving made possible by changed conditions, it has been found possible to lower the price to $1250. This included the Top and Windshield. There are a few cars on the market selling at $1500 which offer the features of reliability, economy and service provided in the standard "Everitt 30"

METZGER MOTOR CAR COM

FIRST ANNOUNCEMENT OF THE 1912 EVERITT

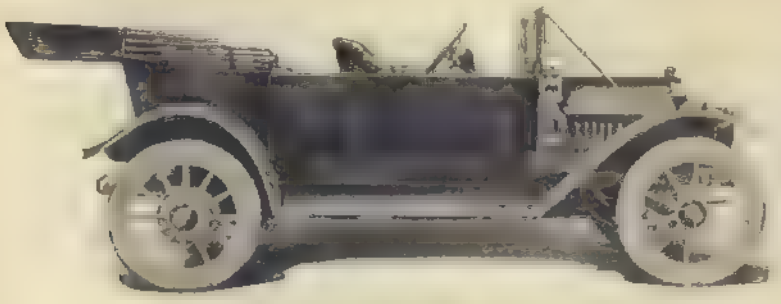
the $1,500 Price and the $4,000 Quality "SIX" AND A "FOUR"---OF THE AND CONSTRUCTION KNOWN

EVERITT

system of infallible jigs and fixtures, this new car was instantly regarded, by men who know, as one of the foremost cars of the day

In 1911 further great improvements were made. In the "New Everitt" was offered an intrinsic value impossible to excel in any $1500 car. But still the makers were not satisfied. The very finest automobile possible—regardless of price—was their ultimate goal.

How this has been attained and what is now available in this marvelous 1912 Everitt we tell you here



The 1912 FOUR-CYLINDER Everitt

4-Cylinder, 36-H. P., Long-Stroke Motor of the Nickel Steel type, 34 x 4 inch Tires, Demountable Rims, Cowl Radiator, 115-inch Wheelbase. Everitt Left-Hand Drive, Center Control, Speedometer, Improved Dual Ignition. Manufactured complete in one factory

Price, $1500

DELIVERIES AFTER JULY 1st

The Most Notable Name of the Year Where EVERITT Appears

The name Everitt above a dealer's door means more this year than any motor car trademark ever meant before.

Motor car buyers are quick to distinguish a genuine motor car sensation.

The extraordinary character of the Everitt offerings is so obvious that it tells its own story.

The name Everitt will act as a sales magnet wherever it appears during the ensuing season.

We are well within the facts when we say that no manufacturer in America has ever furnished his representatives with such a magnificent sales argument.

Just consider the potency of the Everitt appeal to the 1912 motor car buyer.

First comes the sensational Everitt "Six" at an unprecedented price for an unprecedented car at a time when the demand for six-cylinder cars is at its height.

And as if this were not sufficient the Everitt "Four" will be offered at a price only a trifle more than the Everitt "Six" without a cent of additional cost.

Between the Everitt "Six" and the six-cylinder cars which it rivals in running qualities and in results, there is a price gap of $2000 and more.

Everitt Six a Real Sensation

The Everitt Six, as you have seen by the announcement on the opposite page, is the first Chrome Nickel Steel car ever offered at a moderate price.

There is nothing ordinary or commonplace about it.

It is a sensation of the first proportions, made more sensational still by the magic power of the self-starting engine.

Backing up the Six, and not one whit less sensational, is the 36-H. P. 4-cylinder Everitt at $1500.

No Car to Rival It

In this car are incorporated such invaluable features as a long-stroke motor, Chrome Nickel Steel construction throughout, 34 x 4-inch tires, cantilever rear springs, 115-inch wheelbase, one-man top, left-hand drive with center control, ventilating windshield, and speedometer included.

Check over in your mind the strongest competition this car will be called upon to meet—can you remember a single car which will really rival it?

When you have digested the pulling power of these two splendid models, from a sales standpoint turn your attention to the third Everitt offering.

The 30 H. P. 4-cylinder Everitt at $1050 matches in every way the quality character of its running mates.

There is nothing in its field which can seriously challenge its prestige.

Big Everitt Advertising

The name Everitt this year—backed up by a strong and consistent advertising campaign [illegible] will be more than ever before the name to conjure with.

It means a continuous stream of inquirers and an array of values to lay before them with but little personal approach, during the forthcoming season.

The Everitt sales organization for 1911 will be the strongest and strongest in the motor car market.

If it so happens that your territory is [illegible] communicate at once as we want to get in touch with the live one

PANY, 105 Milwaukee Avenue, DETROIT, MICH.

A Guaranteed Efficient Automobile for $350

The Biggest gun ever fired in the Automobile Industry

The Liberty-Brush

With a Power Plant that Will Run 35,000 Miles

The Car that Frees the Horse

AS a declaration of independence for the horse, we announce a new model Liberty-Brush car, which will occupy the same position in its class as the famous Brush Runabout does among the thousands who satisfactorily use it.

The $350 Liberty-Brush is the result of long experience in manufacturing a car of this type. It insures:

LIBERTY to go where you will, when you will, without dependence on the movements of others whom you cannot control.

LIBERTY to go anywhere easily and comfortably without regard to steel rails or the ordinary limitations of travel.

LIBERTY to go to your destination directly and quickly without delays, with a minimum expenditure of time on the way and to do more work in less time and at less cost.

The new Liberty-Brush car means for you:

FREEDOM from crowded street cars and the discomforts and delays of street car travel.

FREEDOM from the necessity of catching trains or waiting for connections.

FREEDOM from failure to keep appointments, loss of time traveling from one customer to another and the loss of money that such failure means.

Everybody has wanted a motor car, and has waited for the time when it would be within his means. The Liberty-Brush fills the want.

The Liberty-Brush, built on standard lines, and a thoroughly capable car, is made possible by our tremendous manufacturing facilities and the fact that we are willing to manufacture for a small profit on each car.

It is a car for salesmen, collectors, solicitors, canvassers, and for anyone who must get quickly from place to place. It is an ideal car for family use, as a boy or girl of fourteen can drive and care for it.

Most important of all, it is the product of the United States Motor Company, which immediately assures its position and its worth.

It is an epoch in the automobile industry, marking as it does a response by a standard manufacturer to the demand for a motor car that any man can buy and maintain.

We have 1800 dealers throughout the country selling our various products, but shall need more dealers to handle this car. We require a representative in every county and a rare opportunity is offered for men of energy who wish to enter a business with a great future. Write or wire for our proposition to dealers.

We shall continue to manufacture the Standard Brush Runabout at $450.00, the success of which is attested by the thousands in service.

For catalogue and booklets describing the car in detail, address the Sales Manager, Liberty-Brush Car, at the New York headquarters.

The Brush Runabout Company Broadway at 61st Street New York

Division of UNITED STATES MOTOR COMPANY

Liberty—Cycle and Auto

THE MARMON

"The Easiest Riding Car in The World"

Five Passenger Touring Car - $2750

THE MARMON "THIRTY-TWO" ANNOUNCEMENT

The MARMON "THIRTY-TWO" made its first appearance in the autumn of 1908. It was immediately recognized as being far in advance of contemporary designs. Since that time this model has been continued with such alterations in body design as were in keeping with the styles and requirements of the times. Increases in size and power have been made with well developed improvements and refinements in mechanical details. Needless to say, we have taken every advantage of the valuable experience we have obtained in racing and other practical tests to make the car better

The ensuing production of this model, which is still well in advance of competitive designs, does not differ materially from the MARMON "THIRTY-TWO" marketed during the past twelve months. Demountable rims are now included, as well as a tire carrier. The engine is unchanged either in size or type—but is now equipped with a two spark dual ignition system—i. e., one set of spark plugs over the intake valves and one set over the exhaust valves, both sets operating at the same time. This change produces marked improvement in the power and general operation of the motor. The clutch and brake pedal assembly has been simplified and the steering column has ratchets for the throttle and spark levers instead of friction controls as formerly used. The rear system is unchanged except that a differential of our own manufacture is now used—the floating drivers have integral flanges instead of riveted flanges. and the size of the brakes is increased from fourteen to sixteen inches diameter. The front and rear wheels have slightly heavier spokes. The wheel base of one hundred and twenty inches remains the same. No changes are noted in bodies except that the five passenger body has a cast aluminum hood over the dash similar to that used on the four passenger body. While there are other refinements and improvements of minor importance, the changes enumerated above are the more noticeable. No changes in price. The line consists of the five passenger touring car, the four passenger suburban and the two passenger roadster, as heretofore; also, limousine, landaulet and coupe models.

The MARMON "THIRTY-TWO" is the rational, logical car—moderate in size and capacity, light in weight with an abundance of power; exceptionally well proportioned and well balanced, it answers all requirements of city use and touring with greater comfort

THE MARMON

"The Easiest Riding Car In The World"

Four passenger Suburban **$2750**

THE MARMON "THIRTY-TWO" ANNOUNCEMENT

and economy than any other type of car. The easy riding of the Marmon; its quietness and enjoyable operation; its wonderful ease on tires and economy of oil, fuel and upkeep—these qualities are famous far and near.

The consistent success of the Marmon in track and road races, of which it holds many world's records—proves beyond question the worth and stability of the car. Manufactured in one factory—a product not excelled by any other in this country or abroad

The Marmon agency has invariably proved an invaluable asset to the dealer. It offers him a business which holds out to him the utmost promise of profit and permanency the most satisfactory kind of a motor car business viewed from any angle

OUTLINE SPECIFICATIONS

MOTOR—Water-cooled, 4 cylinders, 4½-inch bore. 5½ inch stroke. 32-40 H P. Cylinders cast in pairs. Valves on opposite sides

LUBRICATION Marmon system of automatic force feed.

IGNITION—High tension magneto and battery, two spark—dual system. Two sets of spark plugs one over the intake and one over the exhaust valves both operating at the same time

DRIVE—Straight line shaft

CLUTCH Fabric-face cone.

TRANSMISSION—Selective sliding gear 3 speeds forward. 1 reverse. Mounted adjoining differential, rear axle unit. Entire gear set removable through rear of axle,

BRAKES—Double expanding. 16" diameter. Effective and durable. Dustproof.

WHEELBASE—120 inches

TIRES—35 x 4½ Q. D

RIMS—Demountable

STEERING GEAR- Irreversible. One adjusting nut takes up all play 18-inch wheel. Ratchet spark and throttle control.

GASOLINE TANK 17 gallon Gravity feed. Marvel indicator gauge.

SPRINGS—Rear, full elliptic, front, semi-elliptic Provision for lengthening.

BODY Marmon perfected cast aluminum body with sheet metal seats

FINISH—Blue-black bodies with gray stripes, running gears, gray with black stripes.

UPHOLSTERING The finest obtainable; genuine leather luxuriously comfortable

EQUIPMENT Two 8-inch gas lamps option of generator or Prest-O-Lite tank, Dash and tail lamps, Horn, Coat rail, Foot rest, Pump jack and complete outfit of tools, 1 set of tire holders demountable rims, 1 extra demountable rim.

PRICE $2750

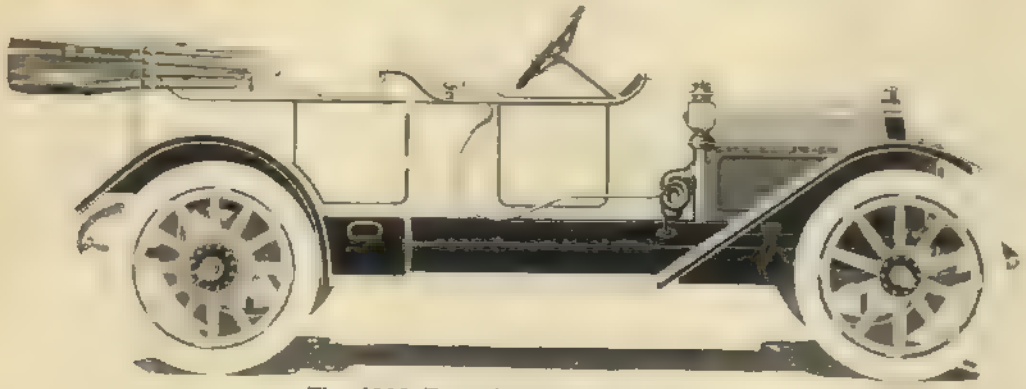
NORDYKE & MARMON CO.

(Established 1851)

Sixty Years of Successful Manufacturing **INDIANAPOLIS, INDIANA**

HUDSON "33"

See the Triangle on the Radiator



The 1912 Torpedo—$1600 Complete

Get this Car and be One Year Ahead of Others

All dealers are now showing the 1912 models of the HUDSON "33"

No other manufacturer has been able, as yet, to duplicate all the advanced ideas that are found on the HUDSON "33."

The original "33" upset the calculations of many manufacturers. Nothing quite so simple, so handsome, so quiet or of so much worth had been brought out. No doubt was expressed by anyone in the trade as to the value of the car or the correctness of its design, for Howard E. Coffin, its builder, is admitted to be the most advanced creator of new, startling and successful ideas that the industry has produced.

He had built four famously successful cars before he turned his attention to the HUDSON "33." Each of those cars has served as model for less clever makers. You will find the duplicates of his earlier designs under many different names. The HUDSON "33" however, was so radically different from anything that had ever been done that it was impossible to so quickly change other designs to conform to it.

This season some manufacturers are using some of the ideas which Mr. Coffin introduced last year on the HUDSON "33." The indications are that by 1913 a great many other cars will be close duplicates in all essentials of the HUDSON "33."

If you choose a HUDSON "33" you get a type of car that will be in general use next year. You will, in addition, get a much better value than was the original HUDSON "33"—that of 1911.

The 1912 car is a distinct advancement over that model. It is little different mechanically; but in the way of refinement, extra equipment and in other details which add to the life, appearance, power and comfort-giving qualities of an automobile, it is much better.

The Car Which Last Spring 2,000 Failed to Get

No car is talked about so much as the HUDSON "33." Everybody who knows anything at all about automobiles knows the wonderful value and advanced ideas of the "33."

The entire year's production of the factory was contracted for by the trade in less than a month. Orders from 687 individuals were placed the first day the car was offered for sale and at the close of the 1911 season we had more than 2,000 orders which we could not fill.

That is the story of the HUDSON "33."

No dealer was able to take care of his trade. We have orders on hand now that will take months to fill.

See the HUDSON "33." People buy it because of its recognized value. What others do in this respect should be your guide.

Go to your dealer's and see the 1912 HUDSON "33." If that is not convenient, write for literature.

The HUDSON "33" is furnished in four models, all on the same chassis. The price of each model is $1600. The Touring Car carries five passengers; the Torpedo, four; the Roadster and the Mile-a-Minute Roadster, two each. All models except the last are equipped with fore-doors, genuine mohair top and wind shield. Equipment includes 4-inch tires, Demountable Rims, extra rim, tire irons, highest grade black enameled lamps, Bosch Magneto, Prest-O-Lite tank, tools, etc.

HUDSON MOTOR CAR COMPANY

7069 Jefferson Avenue, Detroit

This plant, covering 9 acres—2 city blocks in length—was erected especially for the manufacture of the HUDSON "33"

The Batten-Dayton Commercial Car

The Batten-Dayton Motor Co., of Chicago, Ill., are displaying for 1911 two models of commercial cars—Type "B" of 1000 lbs. carrying capacity, and Type "D" of 2000 lbs. capacity. The design of each is the same, except Model "D" is built stronger and heavier throughout to carry its extra load. Any style of body for either model, adapting cars for taking care of any line of business will be supplied to purchasers.

The controller is the Westinghouse and is made in such form that it may be let into the seat of the vehicle where it is easily accessible from top and front. It is provided with four speeds forward and two reverse. This controller provides for speed regulation by operating the batteries in series so far as is consistent with convenience and other considerations. The reverse drum is part of the controller. The main drum and

Fig. 1. Batten Dayton Electric Delivery Car. This cut shows a full panel express body, although other types of bodies can be supplied. The price is $1,475, or $1,500 equipped with B-D troubleproof tires.

The Batten-Dayton is built on the most conventional lines and is constructed throughout of the very best material obtainable. Every bearing is carried on either ball or roller bearings.

The drive is from motor to jack shaft, through bevel gear drive of extra wide face gears, then by ⅝ x ¾ pitch roller chains to each rear wheel.

Motor and Controller.

The motor, like any shaft drive electric car, is placed longitudinally with the frame and is supported with jack shaft at three points, thus taking off all strain due to rough or uneven roads. All working parts of motor and drive to jack shaft run in bath of oil in oil-tight housings, making it very quiet, clean and more efficient than the chain transmission.

the reverse drum are made interlocking, that is, it is impossible to reverse the motor with the controller handle in any but the off position. In this position the main drum is locked unless the reverse drum is exactly in the forward or reverse position. All contacts and arcing parts are made of hard drawn copper. The contact fingers are all above the drum, where they are most accessible of adjustment or renewal.

The terminals on both motor and controller are for cable connections. Owing to the bumping and jarring of vehicles, wire has been known to crystallize and break, but where properly flexible cables are used, this difficulty rarely, if ever, occurs.

The motor is cylindrical in form, and consists of the cast steel field ring, the end bell and the front and end brackets. The pole fields are connected and are held on

pads on the inside of the field ring by two bolts passing through from the outside Both the pads and the poles are machined, there by securing perfect magnetic joints. The pole tips are wide-spreading, serving the double purpose of holding the field coils in place, and of distributing the magnetic field in such a way as to give the best commutation.

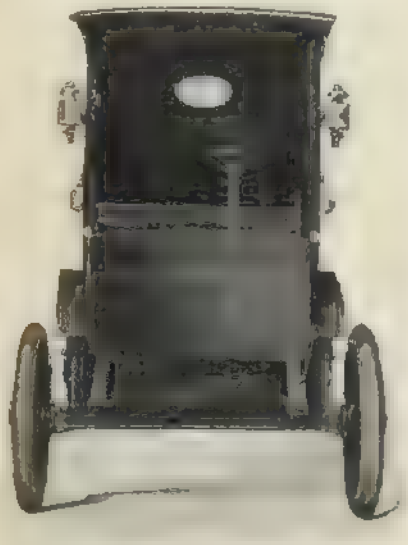


Fig. 2. Front view of Batten-Dayton Electric Delivery Car

The aramature is of the slotted drum type, with a laminated steel core built up on a sleeve, so that the shaft can be removed or replaced without disturbing the armature iron and with the least possible expense and trouble. This is a very important feature, as the shaft is a part of the motor most likely to require replacement. The commutator is also mounted on this sleeve, and therefore, neither it nor the windings will be affected by the removal of the shaft The armature is wound with machine formed coils, which are held in the slots by bands of steel wire sunk in the core. Both the armature and field coils are heavily taped and treated with insulating compounds and varnishes which make them impervious to oil or moisture.

The shafts are generous in their dimensions and run on Hess-Bright ball bearings. The brush holders are bolted firmly in V ways on the front end brackets and may be adjusted radially. They are designed with particular reference to their special service and the brushes are ample in cross section to prevent unnecessary heating and sparking. A large opening is provided in the end bells over the commutator which affords access to the commutating parts. An aluminum cover, machined to a perfect fit, is fastened over this opening The motor is as nearly water-proof as can be made, this construction being necessary from the fact that it must keep out moisture from the motor, which would be likely to cause trouble

The equipment of the Batten-Dayton electric cars for safety and convenience includes a main switch. These switches have three positions, a charging position, a dead position and a running position. In the charging position the battery is in series with the charging receptacle, but the controller, motor and other parts are out of circuit. These parts may, therefore, be safely inspected or repaired without removing the battery from its position or while it is charging. In the middle, or dead position, every circuit is open, being disconnected from the charging receptacle. Only in this position can the switch handle be inserted or removed, and in this position the switch locks itself so that it cannot be removed except by being unlatched by pushing in the handle This scheme prevents any one not having a similar handle from using the machine

The battery equipment consists regularly of 27 cells, 13 plate M. V. type for Model "B" and 42 cells of 13 plate M V. type for Model "D." This battery is sufficient to give cars from 40 to 50 miles on a single charge. Both models are designed to take the Edison battery, which are furnished at an additional cost. The Edison battery increases mileage to about 50 to 60 miles per charge Both models are geared to run 12 miles per hour

Fig. 3. Rear view of Batten-Dayton Electric Delivery Car, showing large doors for access to carrying space.

Price of Model "B" is $1475, complete with full panel body. Price of Model "D"

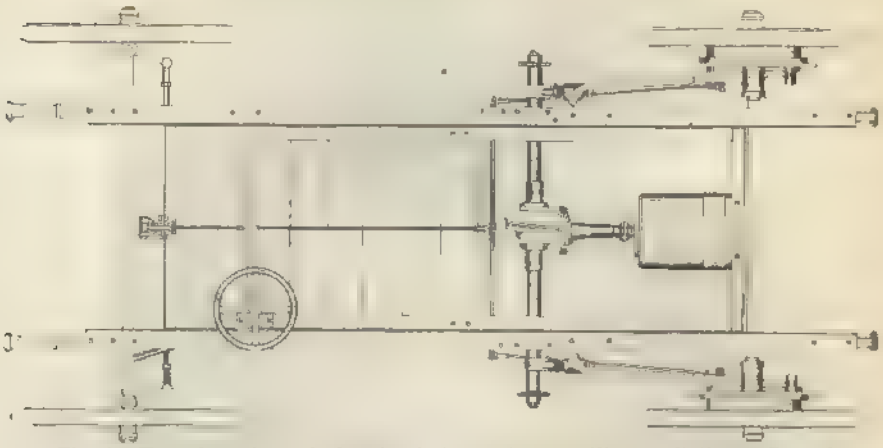


Fig 6. Top plan view of chassis of Batten-Dayton Electric Delivery Car, showing bevel gear drive to jack shaft and chain drive from jack shaft to rear wheels The motor is of the Westinghouse high efficiency type and is operated by a Westinghouse controller

is $1875, complete with open, flat board, express body

Some of the Specifications.

The wheel base is 88 inches and the tread standard, 56 inches. The frame is reinforced angle iron, 5-16 x 3 x 3 inches. The springs are ¾ elliptic in front and semi-elliptic in rear. The brakes are 14 inches in diameter, double acting, internal expanding on each rear wheel The steering gear is of the wheel, with sector and pinion type. The axles are 1½ inch spindle, front and rear. The tires are 34x2 inch solid, or 32 x 3 inch "B-D" trouble proof. The carrying space is 44 inches wide, 72 inches or 80 inches long, and 56 inches high. The equipment consists of electric side and rear lamps and full set of tools. The speed is from 11 to 14 m. p. h., depending on the service required. From 35 to 50 miles can be traversed on one charge.

The White Military Ambulance in Service at the Seventh Regiment Camp, Peekskill, N. Y. This White Ambulance was in constant service with the famous Seventh Regiment at Camp Peekskill, N. Y., being used by the regiment in all of its field work and sham battles with the West Point cadets. A number of men have been injured by falling off horses and have been carried to the hospitals by this White Ambulance in record time. The West Point and Seventh Regiment officers have been more than pleased with the efficient service rendered George Roberison, the famous driver, is shown driving.

USES ELECTRIC COMMERCIAL CAR TO HOIST SAFES

The accompanying illustration is interesting in that it sets forth the use made of an electric delivery wagon in hoisting safes. This vehicle, a Waverley electric, is in the service of Lilly & Stalnaker, of Indianapolis, Ind., who have been using the truck for this purpose for some time past. Instead of hoisting by hand windlass, a long rope from the block and tackle is attached to the car which is then run down the street and the safe hoisted in short order. The performance is repeated with various other heavy articles to be raised to upper stories of high buildings. In this manner the work is quickly performed so that the truck serves a double purpose.

The Ideal Auto Truck

The Ideal Auto Company, of Ft. Wayne, Ind., has been manufacturing commercial cars for three years, starting in a very small way with a 1000 lb. car and gradually growing in size as it developed its line and quality of trucks. This line now includes four models, of 1200 lbs., 1600 lbs., 2000 lbs. and 3000 lbs. guaranteed capacity respectively, with a 4000 lb. truck under development at the present time. The Company has recently doubled its capital stock, moved into very much larger quarters, added greatly to its machinery and equipment, and will build 500 cars during the coming year.

Fig. 1. Model "F" one-ton Ideal Truck, 1912 Model, as used to deliver bottles of mineral water at Fort Wayne, Ind.

We illustrate herewith its new Model "F" 2000 lb. truck, which has just been placed on the market.

Motor.

The engine is of the two cylinder opposed type, with cylinder standing crosswise of the truck frame. The bore is 5¼ in., the stroke 4½ in., h. p. is 24. The engine is water jacketed, with thermo-syphon cooling and self-contained oiler system. Ignition is by Bosch dual high tension magneto with movable spark and with batteries and coil in a neat box on the dash. The magneto is attached rigidly to engine frame. A Marvel carburetor is used and the intake manifold is raised above cylinders and the carburetor placed high, avoiding gasoline condensation troubles in cold weather

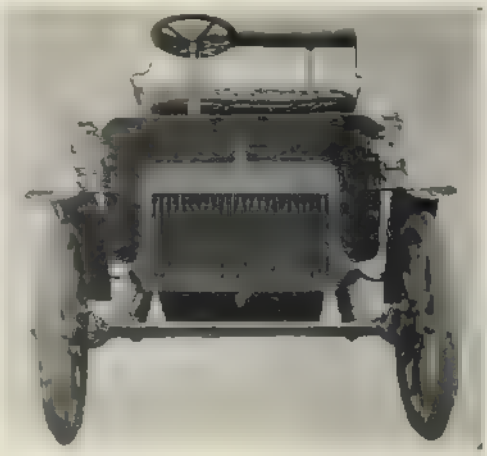


Fig. 3. This view shows the type of radiator and general front view of the Ideal. Notice the bar which extends between the forward ends of the springs and acts as a fender.

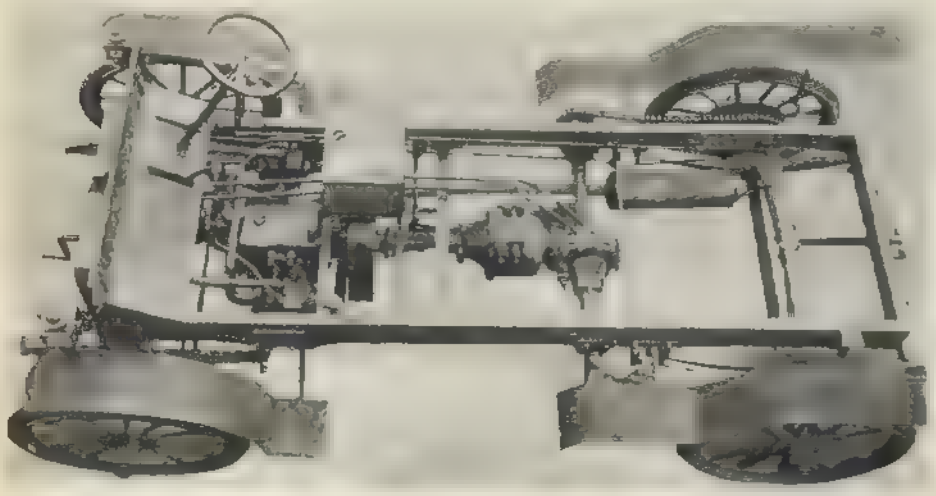
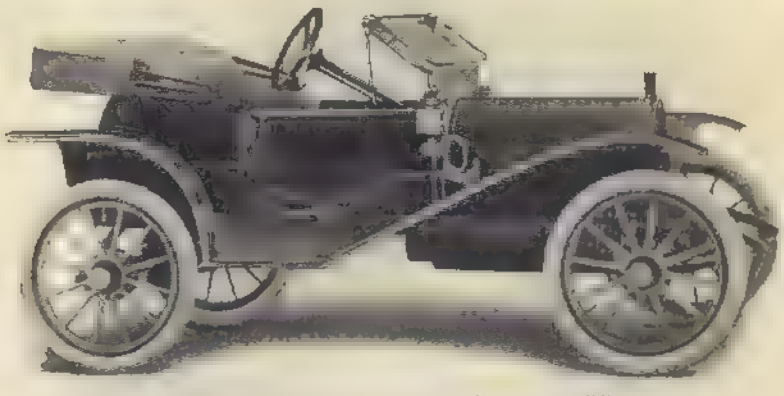


Fig. 2. Plan of chassis of Ideal Truck showing power-plant and driving system. The gasoline tank is just above the flywheel and under the driver's seat. The transmission gear set is integral with the jackshaft differential.

For 1912----complete equipment included



Runabout—4 cylinder, 20 H. P. motor; Bosch magneto, sliding gears. $750 F. O. B. Detroit, including equipment of doors, top, windshield, gas lamps and generator, three oil lamps, tools and horn.

Runabout
Fully Equipped

Hupmobile **$750**
F. O. B. DETROIT

GUARANTEED FOR LIFE

A car which possesses, in common with the costliest cars of largest size, that smartness and perfection of form which, in a man, denotes good breeding.

A car which avoids the scant proportions which so often characterize cars of medium carrying capacity.

A car which seats its occupants with more luxury and ease and "leg room" than any other of its type and class—and which speeds smoothly away at the touch of one lever and two pedals.

A car which appeals alike to the masculine and feminine members of the family because it so completely satisfies the practical demands of the one; and the artistic taste of the other.

The Hupmobile for 1912 is sold completely equipped.

Thus, $750 buys a Runabout fitted with doors, top, windshield, gas lamps and generator, oil lamps for the dash and rear, a complete set of tools, and horn; $900 includes similar equipment on the touring car, etc.

In addition, we have incorporated improvements which represent $100 more in material alone than in preceding models.

The more important of these improvements include Vanadium steel springs; Timken bearings back of driving pinion; rear wheels keyed onto tapered axle shaft; ten-inch instead of eight-inch brakes; Timken roller bearings on front wheels; new pressed steel, brass lined radiator, with efficiency increased one third; nine-inch instead of six-inch mud-guards; oilers on all spring hangers; Hyatt roller bearings in differential; improved carburetor that will not leak and is easily and accurately adjusted; four instead of two pinions on the differential.

From the first the Hupmobile presented excess value, which you can readily see is greatly increased in the 1912 cars by reason of the added equipment and improvements.

HUPP MOTOR CAR COMPANY, 1234 Jefferson Ave., Detroit, Mich.

THE

CYCLE AND

AUTOMOBILE TRADE JOURNAL

Is the Leading and Largest Motoring Publication in the World

It contains a complete record of all current events in the Trade and of all the principal racing and endurance contests; also a complete description of all new cars, new parts and new accessories. Every event of importance is chronicled in the "Journal."

The following special numbers appear during the year:

Jan. —Buyers' Guide and Great Show Number.
Feb. –Review of the National Shows.
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Each of these special numbers is easily worth the price of a year's subscription.

Nearly 700 manufacturers carry their business announcements in the "Journal" each month, about 300 of whom use no other Automobile Publication to get orders from the Automobilists and the Trade.

174 advertisers have had space in our "Journal" for over five years without missing an issue, which number more than equals the number of advertisers using space in some of the other automobile publications.

To keep abreast of the times and know what's what in the Automobile world, you should have the "Journal" mailed to you each month.

SUBSCRIPTION RATES

1 year	**$2.00**
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5 years	**5.00**

Why not send your order TO-DAY?

CHILTON COMPANY, Market and 40th Streets PHILADELPHIA, PA.

Speedwell Model 12-D Special—5 passenger touring car—4 cylinder, 58 H. P. Motor—121 inch wheel base—$2750. Top and windshield extra.

What Higher Priced Car Can Withstand Comparison With This 1912 Speedwell?

We ask you the question bluntly, because we want you to ask it bluntly of yourself.

Our case is established if we can induce you to make the comparison sharp, direct, and immediate.

The 1912 Speedwell is so satisfying in its appointments, so beautiful in its proportions, so velvet-smooth in its motoring qualities, that you will find yourself stopped in your search for greater luxury.

And this is precisely the stage to which we are eager to bring your mind—to the inevitable point where you will try to find justification for a price higher than the Speedwell price.

All over the country the Speedwell is leading experienced motorists through the same mental process; to the same sharp comparison; with the same fortunate result for the Speedwell.

In substance, this 1912 Speedwell is like every other Speedwell that has preceded it.

But its beauties and its virtues have been so emphasized and refined that you can no longer blind yourself to the necessity of considering it side by side with the costliest cars.

Will you follow your own impulse and our earnest request and contrast the Speedwell with the higher priced car you may be driving now; or the higher priced car the market offers?

THE SPEEDWELL MOTOR CAR COMPANY

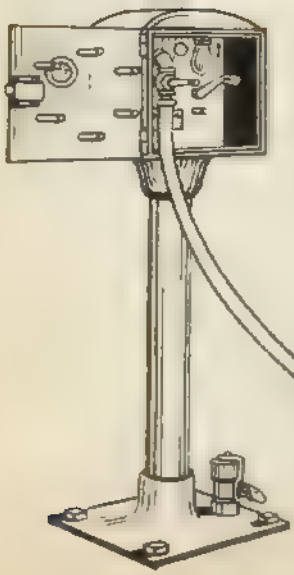
31 ESSEX AVENUE, DAYTON, OHIO

Quick and Large Returns for a Few Shrewd Men

There's a barrel of money—all honest profit—for one man in every locality. This money is quickly made by a unique device, one that arouses the enthusiasm of every motorist who ever saw one. Naturally, a man familiar with the automobile business is THE man for this proposition.

The Geyser Roadside Gasolene Station

an automatic "slot machine" for filling automobile tanks, is the money maker. The proper number of these outfits located along the most toured roads in your vicinity will bring immediate and enormous profits to their owner. They stand on city curb or country roadside where motorists can pull up and fill their tanks in a jiffy and then speed on. It's as easy as operating a penny gum machine.



We are selling these money coining devices together with territorial rights to the best men (or companies) we can find. If there are none yet in your locality YOUR TERRITORY IS OPEN.

Are you the live one?

Send for Booklet.

We have prepared a booklet which explains the machine and the proposition in detail, in fact it tells anything you could ask about either. Write for it

THE GEYSER COMPANY

FORT WAYNE, IND.

NOTHING COUNTS LIKE SERVICE

homas

Thomas Motor Cars for 1912

The chief aim of the Thomas Company is to give the purchaser of the 1912 Model MC 6—40, a six cylinder car as large and powerful, as luxurious, as refined, as characteristic and altogether as desirable, as any other manufacturer can offer for a higher price.

The result is shown in four new and distinctive types of open cars.

Touring Car	**7 passengers**	**wheel base, 134 inches**	**$4000**
Phaeton	**5 passengers**	**wheel base, 134 inches**	**$4000**
Surrey	**4 passengers**	**wheel base, 126 inches**	**$4000**
Runabout	**2 passengers**	**wheel base, 126 inches**	**$4000**

Limousine and Landaulet Bodies of exclusive design [illegible] special order for the chassis of Touring Car and Phaeton types.

The purchase price of a Thomas Car includes Thomas Technical Service which is guaranteed to owners by both factory and dealer.

Further details are given in *"The Story of the Thomas"*—our new catalog which we will send upon request.

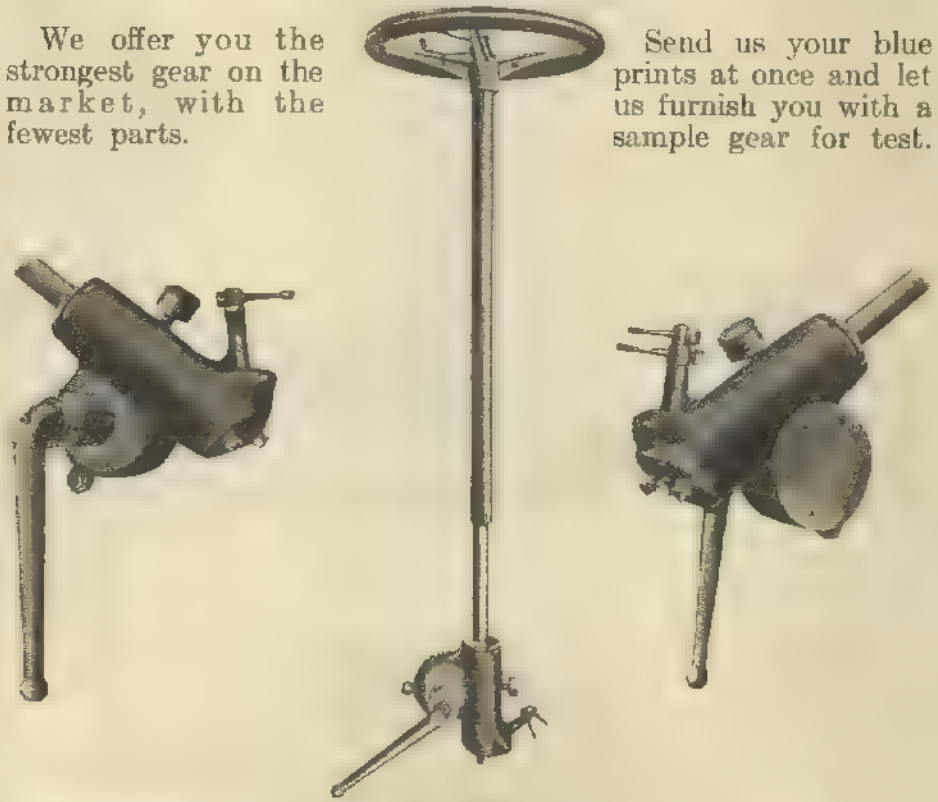
E. R. THOMAS MOTOR CAR COMPANY, Dept. B. Buffalo, U. S. A.

UNIVERSAL STEERING GEARS

SIMPLICITY STRENGTH

Manufacturers We are ready to give prompt deliveries in any quantity on the new Universal Steering Gear.

We offer you the strongest gear on the market, with the fewest parts.



Send us your blue prints at once and let us furnish you with a sample gear for test.

¶ The Universal Steering Gear is a worm and complete gear type, cut from solid low carbon machinery steel, case hardened and ground.

¶ It has the least parts of any gear on the market, and has **no working parts exposed.**

¶ The ratchet and control gears are housed in a dust proof case, easy of access by removing 2 bolts—at the base of the steering column.

¶ The steering arm is a one-piece, nickel steel drop forging, heat treated and ball end case hardened giving the utmost possible strength where the greatest strain comes. No nuts and bolts to work loose from vibration and jar, as is possible with 2 piece arms.

¶ The control levers are brazed on the seamless steel tubes, absolutely preventing looseness and lost motion

¶ The special construction permits dispensing with the quadrant on the steering wheel and an extra tube for it in the steering column.

¶ The steering wheel is an 18 inch aluminum spider with laminated mahogany grips

¶ For manufacturers of trucks, the Universal Gear has an especial appeal, because of its strength and absolute security.

Get in touch with us at once and see our prices before you close for 1912 It will pay you well. We guarantee prompt deliveries.

UNIVERSAL MFG. CO., 1208 18th St., Racine, Wis.

Overland

Nineteen-Twelve Announcement

FOR the season of 1912 we announce the following: Nine new body styles including runabouts, roadsters, small and large touring cars, torpedoes and coupes. Horsepower will run from 25 to 45. Prices $850 to $2000. The following specifications describe some remarkable motor car values for 1912—values made possible by the efficient organization and enormous facilities of The Willys Overland Company, the greatest plant of its kind in the world. We know for a fact that no other manufacturer can produce these cars to sell at these prices without losing money. Write for catalog J-18 giving thorough descriptions of full 1912 line.

Model 59-R

Two-Passenger Torpedo Roadster (Model 59-R) $850

100-inch wheel base—3½ x 4½ motor, 25 h. p., Splitdorf magneto and batteries, 32 x 3½-inch Q. D. tires, Deep Overland Blue, three oil and two gas lamps, generator, full set of tools.

Two-Passenger Torpedo Roadster (Model 59-R) $900

Same specifications as Model 59. See opposite page

Three-Passenger Coupe (Model 59-C) $1250

Same specifications as Model 59. See opposite page.

Five-Passenger Four-Door Touring Car (Model 60-T) $1200

110-inch wheel base, 4½ x 4½ motor, 35 h. p., Remy magneto and batteries, 32 x 4-inch Q. D. tires, Overland Blue body, gray gear and wheels, three oil lamps in black and brass finish, two gas lamps, generator, full set of tools

Model 60-T

Two-Passenger Torpedo Roadster (Model 61-R) $1500

116-inch wheel base, 4½ x 4½ motor, 45 h. p., [illegible] magneto and batteries, 34 x 4-inch Q. D. tires, [illegible] green, ivory stripe, all bright parts nickel plated, [illegible] gas tank, full set of tools.

Four-Passenger Torpedo (Model 61-F) $1500

Same as Model 61-R.

Five-Passenger Four-Door Touring Car (Model 61-T) $1500

Same as Model 61-R.

Four-Passenger Coupe (Model 61-C) $2000

Same as Model 61-R.

Model 61-C

The Willys-Overland Co.
Toledo, Ohio

desired. The pistons have oil grooves which carry the lubricant along the cylinder walls to the wrist pins.

Control.

Control of the Motor Wagon is simple. With a compound gear transmission and all gears constantly in mesh there is no shifting of the gears in going from one speed to another.

The control lever is placed in the center of the floor board, steering as before mentioned being from the left. Forward motion of the lever engages the high speed, backward the low speed, while the left foot pedal works the reverse and the transmission brake, the right pedal the jack shaft brakes Spark and throttle are controlled from the steering post

Capacity.

The Motor Wagon selling at $610 is designed to carry a load of 800 lbs. The loading platform is 2 ft. 10 in. wide and 5 ft. long, and is 2 ft above the ground. The chassis is to be had with several kinds of bodies or perhaps more correctly put, modifications of a general delivery wagon type of equipment. Tops may be had when ordered. Price is f. o. b factory, Detroit.

Sanbert Commercial Cars

The Sanbert Commercial Cars are "built in Syracuse and will run anywhere." The Sanford-Herbert Company, which manufactures these cars, has so much confidence and pride in every motor wagon they build that they guarantee the purchaser against any defective parts for one year from date of shipment

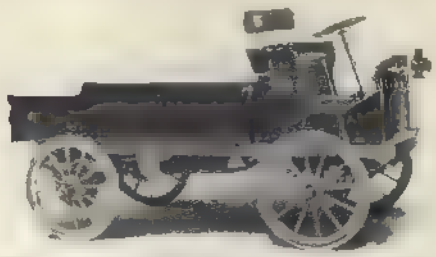


Fig 1. Sanbert Model "J" Open Box Delivery Wagon. The inside length of body is 7 ft. 7 in., and width 3 ft. 8 in., making 28 sq ft The price is $1,500.

Power Plant.

The motor is a two cycle air-cooled type with three cylinders having a bore of 4 in and a stroke of 4½ in., giving 25 h. p

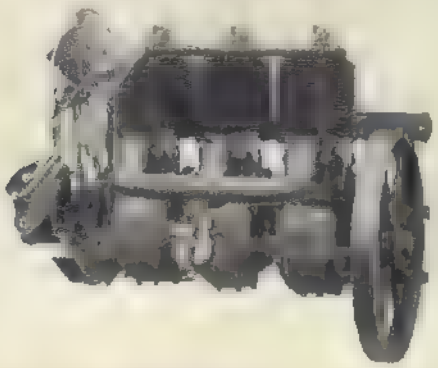


Fig 2. Sanbert Power Plant from the intake side. The motor is a two-cycle air-cooled one with a bore of 4 in and stroke of 4½ in.

This eliminates complicated mechanism freezing and leaking of radiators and other troubles.

Ignition is by means of a Bosch high tension magneto which is gear driven from the crank shaft, the gears running in oil in an enclosed gear case. To lubricate the Sanbert engine, oil is mixed with the gasoline in the gasoline tank, preventing the delays and expense incidental to the use of oiler and tubing.

Transmission, Brakes and Axles.

A planetary transmission is used allowing two speeds forward and one reverse, having Sanbert patented clutch bands, the control locking in both forward speeds.

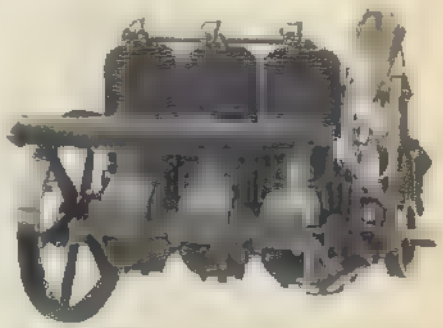


Fig Sanbert Power Plant from the exhaust side. The flywheel is of the spoke pattern Fan has a metal rim and is driven by a flat belt from a pulley on the crank shaft.

The brakes are of the Sanbert type, insuring positive and equal strain on a braking surface of 245 sq in., and braking in backward as well as forward motion The brake bands are lined with autobestine

The front axle is of I-beam section, ¾ in x 2⅜ in., with a tensile strength of 75,000 lbs., and an elastic limit of 40,000 lbs. to the sq. in. The manganese bronze steering knuckles are fitted with Standard roller bearings. The rear axle is 1⅝ in. square,

made of special manganese steel and is equipped with Standard roller bearings.

Other Details.

The wheel base is 88 in. and the tread 56 in. The wheels are 38 in. artillery type, having spokes and rims made of first quality second grown hickory. Diamond 2½ in. solid motor tires are supplied mounted

Fig. 4. Sanbert Power Plant and Model "J" Chassis. The transmission gear set is located in the middle of the frame integral with jack shaft housing. Final drive is by double side chains from jack shaft to rear axle

on standard clincher rims. Pneumatic tires will be furnished extra. The gasoline capacity is fourteen gallons. The speed averages from 12 to 17 m. p. h., varying with the grades and loads. The capacity of the machine is one ton.

The frame is made of 4 in. channel section steel with a bumper in front. Final drive to the rear axle is by Baldwin chains 1¼ in. pitch, ⅝ in. roller and ½ in. wide The front springs are 2¼ in. wide and consist of eight plates semi-elliptic. The rear springs are platform, 2¼ in. wide with nine plates on the side and ten on the cross spring.

Bodies can be supplied in panel top, open box delivery, open stake, or any other kind to suit the requirements of the user. The colors can be selected by the purchaser. The equipment consists of two front lamps, tail lamp, speedometer and tools.

Open box delivery or open stake body sell for $1500; panel body $1625, f. o. b. factory

These cars are thoroughly tested under full load before shipment is made from the factory. Every part is standardized and absolutely interchangeable with any similar part on the same model.

AUTO STAGE LINES

The Newburgh Automobile Company, of Newburgh, N. Y., has started its fourth auto stage line in Orange County. Already three lines have been established and are in successful operation. The new line will run from Walden to New Platz. These lines will open up territory hitherto isolated from the city.

New Model "H" Reo Light Delivery Power Wagon, $750, in Actual Use.

This Reo power wagon was recently purchased by the Cox Bottling Company, Wichita, Kansas, and is now doing the work which formerly kept three wagons busy. The load carried by this power wagon averages from 1,400 to 1,800 pounds per load. It was sold by the Wichita Auto Company, Wichita, Kan

The Brush Taxicab

The first low-priced taxicab has made its appearance, and is a one-cylinder Brush runabout, costing $850. Just how much influence it will have on taxicab fares cannot be predicted, but no doubt the machines can be profitably run on fares much below those charged by the operators of the larger, heavier, more expensive four-cylinder cars, due to the lower first cost, lower cost of operation and low amount of depreciation

matting, which makes for cleanliness, durability and continued good appearance. The lower inside portion of the body is also lined with aluminum.

No frills or delicate ornamentations are provided and destructive passengers cannot cause damage. Instead of light silk curtains, the Titan has heavy expensive curtains, like those used in Pullman sleepers The glass in the windows is held in position

The Two-Passenger Brush Taxicab; Price, $850

The cab is called the Titan, and is exclusively a two-passenger vehicle

The body is an original creation of the Landaulet type having a single front seat with baggage rack at the driver's right. The seats and trimming are of rattan, which is immune from damage in rough usage, sanitary under all conditions, and almost indestructible. The floor boards, scuff plates and toe boards, inside and out, are aluminum

with screw strips—not putty, consequently the cab is not laid up every time a window is broken. Thumb-screws and felt keep windows rigid. The speaking tube is not a long cord, to be pulled off, but a stationary one-piece metal tube, which goes through the division post, between the two front windows

The chassis is the standard Brush chassis, single cylinder, 4 x 5, water cooled motor

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The Kandle Motor Car Company, of Philadelphia, has purchased a site in Lansdowne, Pa., and will erect a factory for the manufacture of pleasure and commercial cars

The Garford Company, of Elyria, O., has started to manufacture motor driven fire apparatus, patrol wagons, ambulances and similar public service vehicles. The machines will be made according to individual specifications.

C. J. Fisher, formerly agent for the Reliance truck, is now the New England representative of the Gramm Motor Truck Company in Boston, Mass., with offices at 184 Summer Street

The Adams Brothers Company, of Findlay, O., manufacturer of Adams one-ton trucks, is making another addition to its present plant which will be used for frame assembling. The new building will be 87 x 200 ft.

more than one pedal to be in an operating position at once. A slight touch on any disengaged pedal or the brake, immediately releases the high speed pedal before the brakes take hold, and so on with the other pedals. This system protects the transmission from abuse.

Other Details.

The regular equipment of tires consists of 2¼ in. internal wire solid rubber tires, which have a Cortland rim fastening device

Fig. 4. One corner of the Cortland Motor Wagon Chassis with wheel removed to show the construction of the brake drum, etc. Note the shape of the radius rod and position of the brake pull rods. The axle is drop forged steel, 1⅛ in. square

which, it is claimed, has all the good features of both side and internal wire fastenings with the disadvantages of neither. New tires can be put on for $15 per wheel.

The radius rods and jack shaft hangers are of ample strength and simplicity. By removing the caps from the hangers and a pin from the universal joint the transmission can be removed entirely from the chassis. The radius rods are provided with a double screw adjustment to take up any slack in the chains.

Ball bearings are provided throughout, with the exception of the motor bearings. The wheel base is 84 in. and the tread 56 in. The equipment consists of two side lamps, tail lamp, horn and roll tool kit. The standard color is—running gear crimson, black striping, bodies carmine and maroon, gold striping. Bodies will be painted to order in other colors. The machines are guaranteed by the makers for one year from the date of sale.

The prices are: Model A, $1100 to $1150 with box body; Model B with standing top, $1225 to $1250; Model C, square side panel body, $1250 to $1275 and Model D, flare side panel body, $1300 to $1325. These prices are for the air cooled wagons, the water cooled being $50 extra for each style.

The factory of the Cortland Motor Wagon Company is located at Cortland, N. Y. The firm is headed by R. H. Dadwin, president; Tracy A. Rudd, vice-president and Edson F. Starks, secretary and treasurer.

The cut shown herewith is that of the Whip City Model 24, made by the P. H. P. Motor Truck Company, Westfield, Mass. The strong features of the car are the sturdy construction, simplicity of design and ease of operation. The car will maintain a speed of 20 m. p. h., making speedy delivery possible at a very low cost. The motor is four-cycle, two-cylinder, 5½ x 4½ in., water-cooled. Ignition is by jump spark, furnished by a low tension magneto. A Schebler carburetor is used. Lubrication is effected by a mechanical force-feed oiler having a sight feed. A planetary transmission of the selective sliding type, having two speeds forward and reverse. Direct shaft drive. The rear axle is of the full floating type, the wheel base is 100 in. and the tread the standard 56 in. The tires are 30 x 3½ in. pneumatic, or 32 x 4 in. solid. Two sets of brakes, external contracting. The loading space is 7 ft. long by 3 ft. 6 in. wide, and the capacity is 1 000 lbs. The price is $850, including standard equipment of two side lamps, tail lamp, horn, jack, pump and repair outfit.

ATTENTION! Motor Car Builders!

Manufacturing Details Relieved Product Improved

We specialize in the production of machine parts, such as

Pistons, Piston Rings, Piston Pins, Motor Gears, Transmission Gears, Hardened and Ground Parts.

All to your specifications where required. We offer you a better product at a consistent price and help you out with your manufacturing details.

Try us on Helical Cut Motor Gears and let us solve the motor gear problem for you.

Bearing Troubles Eliminated

Our improved system of die casting and the use of only the highest grades of bearing metals enables us to offer you a die cast bearing proposition of superior merit

We furnish die cast bearing bushings to your specifications in any of the high grade motor babbitts or Genuine Parsons White Brass.

Will You Send us Your Blue Prints for Estimates?

Garage Labor Lightened

FOR THE GARAGE

Designed especially for garage use, our line of Belt and Motor Drive Air Compressors, for tire inflating and cleaning purposes, lighten labor in the garage and save you money. Single and Three cylinder styles.

A post card brings a circular.

The F. W. Spacke Machine Co.
INDIANAPOLIS, IND.

Chalmers Talk Number One

This monogram on the radiator stands for all you can ask in a motor car

AN automobile is not an extravagance. It is an economy. It increases your efficiency. It makes "two minutes grow for you where only one grew before." Some extravagant people buy automobiles, but not very many. Only a few really extravagant people ever can afford to buy them. They spend their money for less useful things. Think that over.

The automobile industry is now the third in the country in point of volume and is still growing. The everyday, sensible, careful-buying business man has made this volume possible. If the motor car was an extravagance he would soon find it out—and quit buying. But he goes on buying. He sees that the motor car is a necessity.

Each year the Chalmers Motor Company has had more orders than it could fill. We have, already this season, shipped to customers more than 60 per cent. of our 1911 output. The remainder is going fast. We take these conditions to mean that we have succeeded in building cars that appeal to the careful business buyers of the country as unusual value at their prices. "30"—$1,500. "Forty"—$2,750. All types. Dealers in all leading cities.

"Forty" $2750

Chalmers Motor Company
Detroit, Michigan

1911 Bergdoll "30"

BACKED BY MILLIONS

WHEN the Directors of our Company decided to build pleasure cars, they realized that to make a success of an undertaking of this character it would be necessary to build the best car in its class and for the first season at least to make profits the secondary consideration. Before contracting for any material we found that in order to build a car such as we are building it would be necessary for us to stand a monetary loss, which we are perfectly satisfied and prepared to meet, believing that a car such as the Bergdoll "30" cannot help but become profitable to both the manufacturer and the agent and a source of satisfaction to the owner.

We are building a popular-priced motor car that is sold with a warranty for a period of one year covering material and workmanship of all parts of the car even including springs. Its equipment consists of such high-class features as CONTINENTAL Q. D. DEMOUNTABLE RIMS, for which manufacturers of cars selling for less than three thousand dollars are making an extra charge of from sixty to seventy-five dollars; LIVINGSTON CELLULAR RADIATOR a type which is used on the high priced cars; ATWATER KENT UNISPARKER which with BOSCH MAGNETO gives this car the very best ignition equipment known to the automobile world; SCHWARZ ARTILLERY WHEELS, brake equalizers, pressed steel rear axle housing and R. I. V. bearings throughout motor and transmission, are other minor features embodied in the chassis of this wonderful little car.

Touring Car,	$1500.00	Toy Tonneau,	$1600.00	Colonial Coupe,	$2500.00
Roadster,	1500.00	Coupe,	2000.00	Limousine,	2500.00
"4-Door,"	1600.00	Taxicab,	2000.00	Landaulet,	2600.00

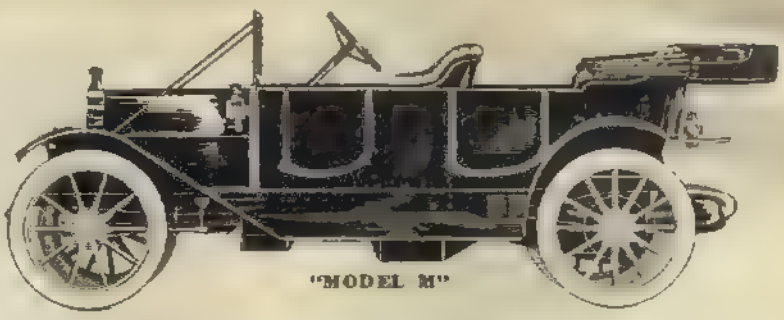
We will exhibit at the Fifth Annual Automobile Show, Kansas City, Missouri, from February twenty-seventh to March fourth.

DELIVERIES ARE BEING MADE ACCORDING TO SCHEDULE

Complete description and specifications appear in our Advance Folder

Louis J. Bergdoll Motor Company

31st and Dauphin Streets Department "S" **PHILADELPHIA, PA.**



"MODEL M"

$1875, Completely Equipped

This splendid motor car is the latest production of the Cartercar factory. It is in a class with the highest type of cars built.

It is offered to the motoring public as the best which can be produced. Nothing tending toward the comfort and pleasure of the passengers in this magnificent machine has been overlooked.

The big, powerful motor is of the kind whose bark bespeaks power—and the bark is not misleading

The regular type of Cartercar Friction Transmission, which has made these cars favorites for many years, is used with a few modifications.

The long wheel base (120 inches) and the three-quarter elliptic springs, combined with the big 36-inch wheels, make this car ride with an ease that is commented upon by those who are accustomed to other automobiles.

The long, graceful, fore-door body possesses lines which meet with instant approval. Its finish is of the very best.

Then, to make the car all that anyone could wish, it is equipped complete with a mohair top and envelope, windshield, 60 mile combination speedometer, horn, gas tank, two searchlights, three oil lamps, tools, jack and tire repair outfit.

Cartercar

Specifications of Model M Touring Car

Motor—Four cylinder, vertical, 40 horse power. Bore 4½ inches. Stroke 4½ inches. Single cam shaft, valves on one side 2½ inches diameter.

Cooling—By Centrifugal water pump, direct driven. Pulsimar radiator.

Lubrication—Splash system. Renewed by positive plunger pump. Crank case design especially for thorough, yet economical lubrication, and for an equal oil supply to each cylinder under all conditions.

Ignition—Jump spark. High tension current magneto and auxiliary battery acting through single non-vibrating coil.

Gasoline Capacity—25 gallons.

Transmission—Carter patented friction transmission, affording infinite number of speeds. Simplest and most efficient transmission known.

Final Drive—Noiseless Chain-in-Oil Drive of great efficiency and life-long durability. Silent chain enclosed in oil-tight and dust-proof housing.

Frame—Pressed steel, channel construction, of great strength and rigidity. New raised pattern with improved spring suspension.

Springs—Three-quarter scrol elliptic rear, semi elliptic front.

Wheel Base—120 inches.

Axles—One piece drop forged front axle, I-beam pattern. Full floating rear axle. Axle shafts unusually large, bevel differential.

Wheels—Twelve spokes, artillery type.

Tires—36 x 4 inches quick detachable.

Brakes—Three entirely independent sets of brakes. External contracting bands on rear hubs, operated by foot pedal. Internal expanding rings operated by hand lever, brake drums of large size. Friction reverse for emergency.

Steering—Worm and sector; irreversible. Wheel, 15 inches, with aluminum frame and spider, and hardwood rim. Spark and throttle leads above.

Body—Straight line fore-door design exceptionally beautiful, with plain panels, and concealed locks and hinges. Tonneau extra large, rear seat, 56 inches.

Color—Raven Blue, with Pearl Gray Chassis. Or all Raven Blue. Or all Pearl Gray.

Upholstery—Best quality dull finish black leather, luxuriously tufted over highest grade curled hair.

Equipment—Three oil lamps, two gas lamps, gas tank, horn, mohair top, with envelope, windshield, 60-mile combination speedometer, tools, jack, and tire repair outfit.

Price—$1875 F. O. B. Pontiac.

You will like one

As in the past, the 1911 Cartercar will remain "The Car Ahead"

Originally the Cartercar was entitled to this phrase because of its advanced simplicity, its reliability, its durability and the low cost of maintenance. To-day the same is true.

The line for the coming season is complete. There is a car for every man, in every station, for every purpose.

In addition to the big Model "M" 40 H. P. Touring Car shown above at $1,875, complete, there will be—

Model "L" 35 H. P. Touring Car with complete equipment, including mohair top and envelope, wind shield, speedometer, horn, gas tank, gas lamps, oil lamps, tools, etc., at $1,600.

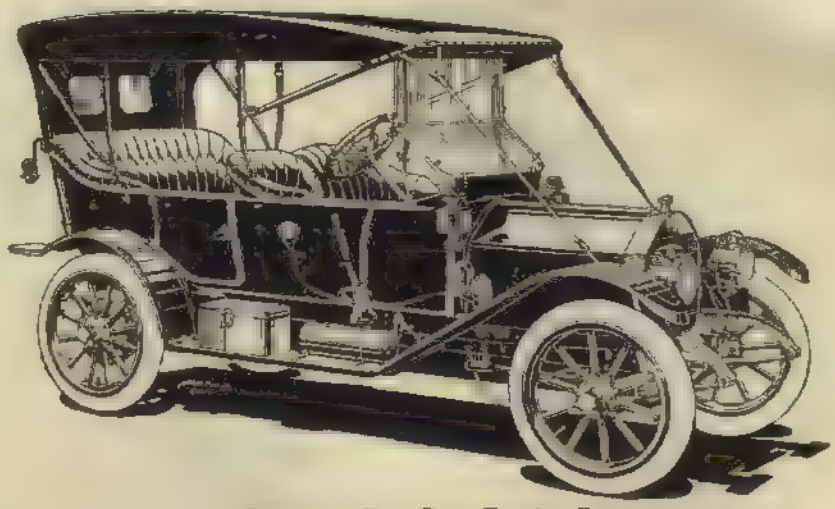
Model "H" 30 H. P. Touring Car, complete with three oil lamps, two gas lamps, generator, horn, tools, jack and tire repair outfit, at $1,150.

Model "T" Light Delivery Trucks in three styles of bodies, open, screened sides, and full paneled, selling at $1,250, $1,300 and $1,350.

Write for full information and literature

CARTERCAR COMPANY

Licensed Under Selden Patent **PONTIAC, MICHIGAN**



5-Passenger, Fore-Door Touring Car

$1850

Getting a Customer Who Boosts

It is one thing to sell customers and another thing to make them boost your car. You can sell them a car with all the attractive finishings and furnishings, but lacking the real **power value** which is so essential to motoring. When the vital weaknesses are discovered, you have not only lost your customer, but his influence, which is really important.

CASE CARS

"The Car with the Famous Engine"

have the beauty and refinement possessed by other cars and in addition, they are built of superior grade material throughout. The "Famous CASE Engine" cannot be duplicated in any car at the CASE price. It is the embodiment of power combined with flexibility. The man who buys a CASE CAR becomes a CASE booster—the Car, itself, is your best salesman.

"Remember the engine when you buy and you can forget it when you drive."

Catalogue No. 13 and full particulars on request

J. I. Case Threshing Machine Company

Racine U. S. A. Wisconsin

This monogram on the radiator stands for all you can ask in a motor car

Chalmers Motor Cars for 1912

"30" Touring Car, 5-passenger, $1500—Including magneto, gas lamps and oil lamps, Prest-O-Lite tank, top, windshield, ventilated fore-doors, horn, full set of tools.

"30" Torpedo, 4-passenger, $1500—Equipment same as "30" Touring Car.

"30" Torpedo Runabout, 2-passenger, $1500—Including magneto, gas lamps, oil lamps, Prest-O-Lite tank, top, windshield, tire irons, horn, tools.

"Thirty-six" Touring Car, 5-passenger, $1800—Including Chalmers self-starter, Continental demountable rims, Bosch dual ignition system, black enameled Solar gas lamps and oil lamps, Prest-O-Lite tank, 36x4-inch tires, four forward speed transmission, long stroke motor—4½" x 5½", ventilated fore-doors, tire irons.

"Thirty-six" Torpedo, 4-passenger, $1800—Equipment same as "Thirty-six" Touring Car.

"Thirty-six" Berlin Limousine, $3250—Including full equipment.

"Thirty-six" Cab Side Limousine, $3000—Including full equipment.

"Forty" Touring Car, 7-passenger, $2750—Including Bosch dual ignition system, black enameled Solar gas lamps and oil lamps, Prest-O-Lite tank, auxiliary seats, ventilated fore-doors, top, windshield, 36 x 4-inch tires, tire irons, tools, horn.

"Forty" Torpedo, 4-passenger, $2750—Equipment same as "Forty" Touring Car.

"Forty" Detachable Pony Tonneau, $2750—Equipment same as "Forty" Touring Car.

HERE are the motor car pace makers for 1912. The Chalmers "30," $1500—the new "Thirty-six," $1800—the reliable, standardized "Forty," $2750.

When the Chalmers "30" was announced four years ago, the words "astounding value" were used to describe it.

Each season since, we have greatly increased the value of our cars without increasing the prices. And now for 1912 we say to the motor buying public, that this year more than ever before we offer you "astounding values" in Chalmers cars.

The "30" last year sold for $1750, fully equipped. Think of it this year—refined and improved in every possible way, with ventilated fore door bodies, inside control, magneto, gas lamps, Prest-O-Lite tank, top and windshield—for $1500!

The Chalmers "Thirty-Six"—a car of greater size and increased power leaves nothing to be desired. Its long stroke motor is a great puller; a wonderful hill-climber and gives you all the speed you want.

The four forward speed transmission—until now found only on the highest priced makes—gives a flexibility of control hitherto unknown on medium-priced cars.

The new Chalmers compressed air self-starter does away with the last of the original inconveniences of automobiling.

The body is big, roomy, luxurious. Big wheels and tires, ample springs, splendid upholstering assure comfort.

In our plan of business, your interests and ours are mutual. We have been unable to find any brand of salesmanship equal to quality in the goods; or any sort of advertising one half so effective as good words spoken by those who know the merit of Chalmers cars.

We guarantee Chalmers cars to be free from defects in material and parts. For one year we will replace free any defective parts if returned to us for inspection.

It is impossible, for lack of space, to show pictures and give detailed descriptions, but we shall be glad, on request, to send our complete new catalog.

Chalmers Motor Company, Detroit, Mich.

UNQUESTIONABLE SUPERIORITY

(THE PROOF)

SOLAR

SOLAR Lamps are built for motor vehicles of all kinds—cover the **entire range** of Lamp-dom

We have spent over **12 years** specializing in the manufacture of gas and auto headlights; and were there a way to build a lamp **better suited** for its purpose we would **know that way** and take advantage of it.

Today, **Solar** Lamps are found a part of the regular equipment on most all the high grade cars sold in America. It is the **only** lamp in which the makers of these automobiles believe they have found the true expression of the **quality** back of **the car**

Safety demands Solars—so does Respect for **Real Quality.**

Imitations Mean Limitations

There are **no** limitations in Solar Lamps. They possess the additional advantages of features found in no other lamps. It is to your interest—it is **your duty,** to investigate **Solars.**

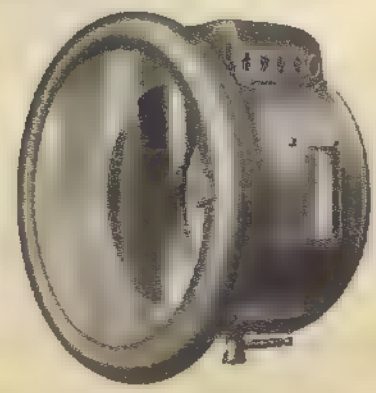
They are fully described in the catalog. Write for it **today.**

BADGER BRASS MFG. CO.
KENOSHA, WIS. NEW YORK CITY

LAMPS

The Solarclipse

Combination Oil and Electric Side Lamp



Torpedo Type

48

MISS! SKIP!

Patents pending
Misskip Enlarged
Order Now!

Chug! chug!—(miss)—chug!—(skip)—chug—(miss-skip)—chug! chug! chug! Swear! but swear at yourself, for with a set of

Misskip Detectors

you or your chauffeur could easily find the cause of that trouble in a minute, without even stopping the engine! Now, get a set today!

Patents Pending.

MISSKIP DETECTOR

instantly attachable to any spark plug. Complete directions with every set. Mail us your order today!—now!

(1 cylinder)	Single,	$1.00
(2 cylinder)	Set 2	2.00
(4 cylinder)	Set 4	4.00
(6 cylinder)	Set 6	6.00

Post Paid

Champion Spark Plugs

NO SOOTING OILING CLEANING

All Sizes PORCELAIN and MICA **$1.00**

Magneto Special, $1.25

Write us now, enclosing your order, remittance, and your dealer's name. Don't delay! We will ship your order, postpaid, at once on receipt

Patents Pending

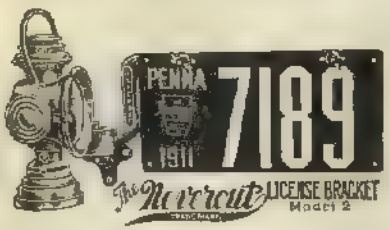
The Champion Spark Plug Co.

599 Jefferson Ave., TOLEDO, OHIO

Comply With the Law!

Attach Your 1911 License Tags to

The Neverout Patent License Bracket



FOR REAR TAG

Fits any size license tag. Can be attached to any make or model of car. Price, $1.00 each and upwards.

Patented April 7, 1908. Other Patents Pending.

Beware of Infringements

¶ We originated what are known to the trade as Combination Lamp and License Tag or number Plate Brackets, for use on automobiles to support a license tag or plate in such relation to a lamp that the latter will illuminate the tag. We have manufactured various forms of such brackets for several years past, covered by Letters Patent of the United States, issued April 7th, 1908, other forms being claimed in pending Letters Patent which will shortly be issued.

The Neverout Front License Bracket does away with leather straps. Price $1.00 each and upwards.

¶ We have brought suit in the United States Circuit Court against James L. Gibney & Bro., in the Eastern District of Pennsylvania, and against Cox Brass Manufacturing Company and Lowe Motor Supplies Company, Thomas Harper and American Auto Supply Company in the Southern District of New York, for damages exceeding $65,000.00 for infringement of said Letters Patent, and give this notice that any MAKER, JOBBER, DEALER or USER of such a bracket, unauthorized by us, is liable to a suit for damages, and we propose to vigorously maintain our rights in the premises.

For your protection look for the name "Neverout" on every bracket.

The Neverout Rear and Front Brackets Comply with All the Laws
Write today for full particulars

Made only by

Rose Mfg. Co., The Neverout Factory, 911 Arch St., Phila.

Sole Manufacturers of the Celebrated Neverout Lamps and Acetylene Generators

MERCURY TRUCKS FOR LIGHT DELIVERY PURPOSES

SPECIFICATIONS

BODY—Open express, canvas top or full panel top.
WHEEL BASE—85 inches.
TIRES—1¾ inch, solid rubber.
MOTOR—Air-cooled Mercury.
IGNITION—Jump spark.
TRANSMISSION—Planetary
CONTROL—Single lever control for all speeds high, low and reverse. Brakes operated by foot pedal
DRIVE—Shaft to jackshaft, double chain to rear wheels.
CARRYING CAPACITY—1000 lbs.

Mercury Light Delivery Truck
(Open Express Body)
Price, $750.00 F. O. B. Chicago
Capacity, 1000 pounds.

Embodied in the construction of Mercury Trucks are many exclusively distinctive features which appeal to merchants, agents, dealers—everyone interested in the development of a more efficient, less expensive and more satisfactory delivery service.

WRITE FOR DETAILS—NOW. We have some desirable open territory

Union Stock Yards **The Mercury Manufacturing Co.** Chicago, Ill.

"Manufacturers, not merely assemblers."

Chase Motor Vehicles

Selected by the Big Ones Who Know

About Repair Costs

The table below shows the repair cost, including accidents and normal wear and tear, of sixteen Chase Motor Wagons. It is not a selected list, but includes every Chase Truck in operation in a Northern City.

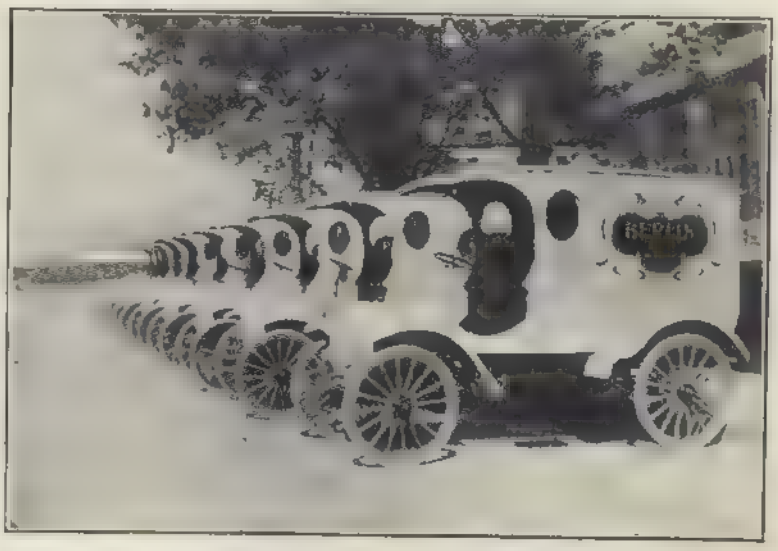
The owners store and care for these machines, and they do not get the benefit of systematic inspection and adjustment.

	Months Used	Cost per Month
Hardware,	20	$12 76
Family Utility Wagon,	10	9 11
Hotel Supply Wagon,	9	18 30
Tobacco Delivery,	9	10 44
Dairy Products,	4	1 20
Dry Cleaning,	4	.00
Wholesale Plumbing,	6	2.10
Pure Food Manufacturer,	16	10 85
Creamery City Delivery,	4	$ 00
Fish and Oysters,	22	13 26
Liquor Dealer,	21	15 36
Manufacturing Soda Asst.	6	3 30
Machinery Supply House,	6	3 36
Physician's Auto,	13	5 73
Grocery, Retail,	5	.75
Mfr. Heating Appliances,	3	.00
Average Monthly Cost,		**$10.003**

CHASE MOTOR TRUCK COMPANY, Dept. C, **Syracuse, New York**

Chase Motor Vehicles

Selected By The Big Ones Who Know. And selected in quantity lots



The Berlin Dye Works of Los Angeles, Cal., [illegible] selected by [illegible] after [illegible] Wagons are [illegible] Chase Motor Truck [illegible] Model L [illegible] Chase [illegible] Chase [illegible] Chase

YOU ALWAYS GET VALUE RECEIVED WHEN PURCHASING

"DEFIANCE"

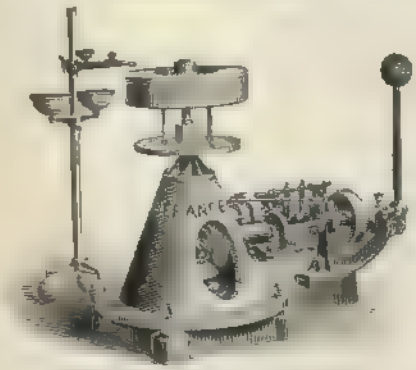
WOOD-WORKING MACHINES

Single machines or complete equipments for producing Hubs, Spokes, Carriage, Wagon, Automobile and Auto Truck Wheels, Wagon and Carriage Shafts, Poles, Neck Yokes, Whiffletrees, Hubs, Spokes, Shafts, Bent Work, Lumber Trucks, Hub Boring Machines, Spoke Pointers, Tenoners, Mortisers, Bolt Cutters, Shaft Planers, Shaft Rounders, Bolt Pointers, Chair and Table Legs, Balusters, Cane Work, Dimension Stock, and general wood working machinery.

Invented and Built by

THE DEFIANCE MACHINE WORKS

DEFIANCE, OHIO



Automobile Fly Wheel Balancer

Get a License to Build the

WORLD'S WORK MOTOR VEHICLES

Their mission on earth is

To retire the work horse and also furnish the power for a motor vehicle and incidentally successfully to smooths and Repairs Road while working.

"FLEXIBLE TRACTION" DOES IT

Glover's Flexible Traction vehicle is the usual horse wagon or the usual carriage equipped with its own motive power and that power is utilized to cushion and protect instead of straining and destroying the vehicle. It is three times as easier on rubber tires. Not a set screw or working mechanism to become loosened or broken. Not a vehicle or wagon or horse shoe to become worn out. Not a wagon or horse shoe to become useless. Patented in the United States, Canada and Great Britain. Special feature not a theory but a demonstrated fact. Only a few more of this type and still in great demand to accomplish factory output. Flexible Traction Company. Just wagon and carriage builders have half the price of other motor vehicles. In quarter the cost of maintenance of other motor vehicles. Flexible Traction does this use. Licenses for wagon shops and parts issued. Built in three sizes and Canada.

PRICES

Five ton truck	$2,500.00
Three " "	1,800.00
Two " "	1,400.00
One ton wagon	1,000.00
Two Seated Surrey	150.00

Our motor is equipped for easy riding

GEORGE T GLOVER, 215 SOUTH 43d AVENUE, CHICAGO

The Atterbury Commercial Cars

are known as the world's standard, as we are the oldest manufacturers of trucks and delivery wagons in America. The Atterbury car is made up of the best material and most careful workmanship. Write for catalogue of delivery wagons, trucks, sight-seeing cars and hotel 'buses

Atterbury Motor Car Co.

BUFFALO, N Y.

Washington Motor Car Co. Business Wagon

This Business Wagon

runs smoothly requires little attention, and can always be depended upon because the

Morse Silent-Running Rocker-Joint Chain

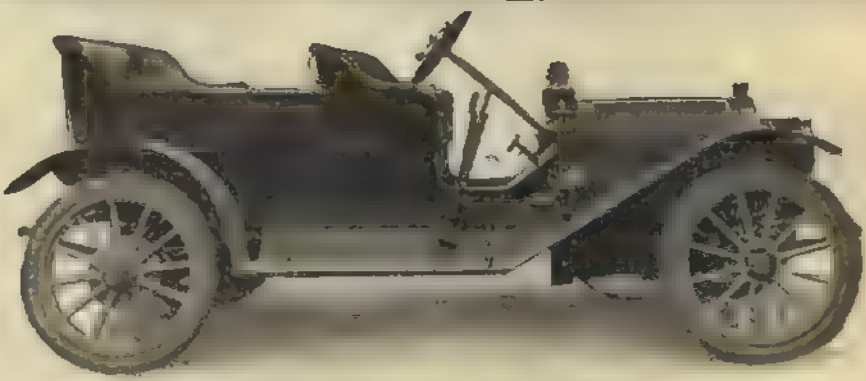
is used for power transmission. It is 99 per cent effcient; requires the least lubrication

Send for Catalogue No 7

Morse Chain Co.

Ithaca, N. Y.

CRAWFORD CARS



11-30 Touring Car, Price, $1375

You cannot measure the real worth of the CRAWFORD BY ITS PRICE,—it's the kind of car and the service you get that count. You can judge many features by examination, but it's only hard every-day service that proves the QUALITY of design and construction.

CRAWFORD MODELS

11-30 Touring Car - - - -	$1375	11-30 Roadster Special - -	$1350
11-30 Standard Roadster - -	$1325	11-35 Touring Car - - - -	$1650

NEW FEATURES FOR 1911

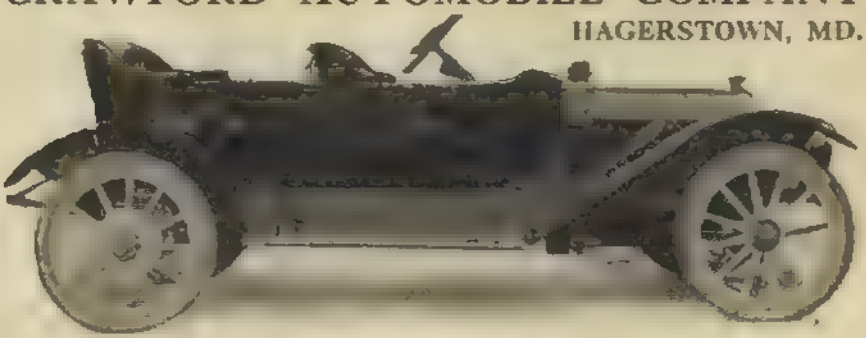
Full Floating Axles Carried on Timken Roller Bearings
Fore Door Bodies **Crawford Twin Cylinder Motor**

Remember, CRAWFORD CARS have stood the test of time, which means that they have been tried and found satisfactory. They are not sold because of some new, freak feature, their popularity is the result of RELIABILITY

We have some territory open for some live dealers, who want to handle a car of exceptional merit. Catalog on request.

CRAWFORD AUTOMOBILE COMPANY

HAGERSTOWN, MD.



11-35 Touring Car, $1650

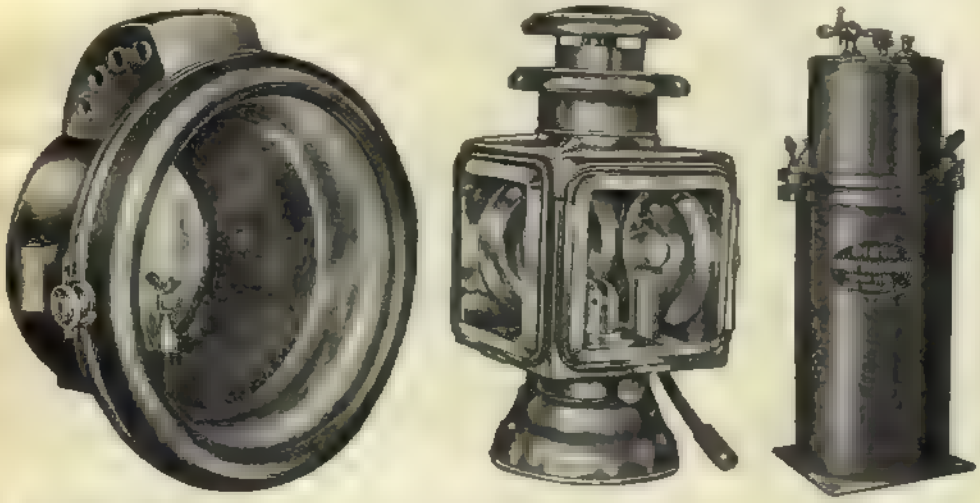
1911 DIETZ LAMPS

The accompanying cuts illustrate some of the latest designs of Dietz lamps, manufactured by the R. E. Dietz Co., 60-62 Laight street, N. Y. City.

The "Victor" is the new close coupled lens mirror headlight. It is made from one piece of 18 gauge brass with smooth surface, and is fitted with a guaranteed short focused mirror. The door lens and lens mirror are demountable and can be replaced without sending lamp to the factory. The set screws are on the inside of the lamp. This lamp is made with 6, 7 and 8 inch mirror, listing at $21, $25 and $30 per pair. Gun metal finish is 15 per cent. additional, black or white nickel 20 per cent. This lamp is also made for electricity and is the same in construction as the acetylene headlight, with the exception that it is fitted with a silver plated parabolic reflector instead of a lens mirror and with 6 v. 16 c. p. Tungsten lamps. Prices, $24, $28 and $33 per pair.

The "King" lamp illustrated is designed to fill the demand for a large size of the company's present type Queen lamp. The lamp is made with two tops. The price is $12.00 per pair, for oil, and $16 00 with electric attachment.

The Dietz "Excelsior" Side Lamp presents an attractive design of electric side lamp. It is adaptable for all sizes and styles of cars, and is fitted with 6 v. 6 c. p. Tungsten lamps, combination sockets for square or round props, silver plated reflectors and removable beveled lenses. The price is $10.00 per pair. The Excelsior tail lamp is the same as the side lamp with the exception that it is fitted with a ruby semaphore lens as shown in the cut. Price is $5.50 each.

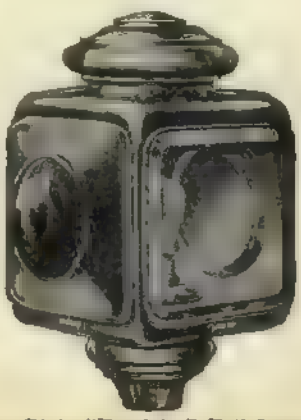


The Dietz "Victor" Headlight, the Dietz "King" Side Lamp and the Dietz "Handy" Generator."

The Dietz "Handy" Generator No. 9 is new this year. It is similar to their No. 8, illustrated herewith, with the exception that it has no water jacket at the bottom shell. The Model 8 illustrated lists at $9.50 while No. 9 lists at $8.50.

The next issue will be the "Special Garage Issue." Don't fail to get a copy.

The Dietz "Excelsior" Side Lamp.



The Dietz "Excelsior" Tail Lamp.

Elmore

Valveless Two Cycle

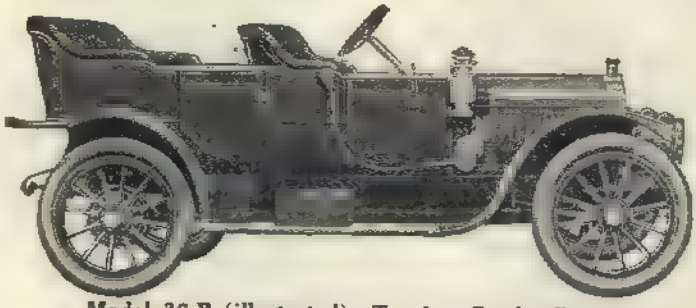
This $1,750 Elmore Produces Some Results That A $6,000 Car Cannot Give.

It Has Double the Power Impulses of the Ordinary Car—Irrespective of Price.

Isn't that rather a distressful thought to the man who owns a car of the highest cost?

Isn't it rather comforting to the man who has imagined that moderate cost means lesser efficiency?

You'll want a reason in your own mind why drivers of other cars are continually changing machines.



Model 36-B (illustrated)—Touring Car for five. 50 H. P., 4-cylinder, High-Duty Motor; 114-in. wheel-base; 34 x 4 in. tires. $1750

You'll want to know why Elmore owners buy more Elmores—why they talk Elmores at every opportunity—why they never cease advising the purchase of Elmore cars.

Here's the dead wall of facts you will come squarely up against:

The Valveless High Duty Motor in Model 36-B gives the same power as the Elmore model sold last season at $2,500.

(And with this excess of power at this season's price the distinctive Elmore ease of control is retained with all the special advantages of the new motor)

The gas distributer of the High Duty Motor admits gas early or late, as desired, producing at will a high or low-powered car.

(Understand clearly this tremendous advantage for the Elmore driver, which cannot be obtained in any other car made.)

The Elmore, on high gear, can be driven at a lower speed than any other car, because of the unequalled frequency of its power impulses.

(To appreciate this tremendous advantage compare the Elmore with an ordinary four-cylinder car or better yet, with the highest type of "six")

With every revolution of the Elmore crank-shaft you have twice the power impulses possible per crank-shaft revolution of a valved motor.

(Six valved cylinders are much better than four, yet they are as far behind the Valveless Elmore as the four cylinder valved motor is behind the six)

The Elmore has no small outer parts to keep in tune, no valves to regrind, no worry-makers of any sort.

(The only sure thing about a valve is that it should be repaired, reground or replaced at frequent intervals to maintain the original efficiency of its cylinder.)

The efficiency of a valved motor depends absolutely upon the exact timing of its valves, and their actuation by means of twenty or more small outer parts on each cylinder.

(A valve which is not timed to the 1-200 of a second, loses at least one-fifth of its efficiency.)

To sum the whole thing up, turning power, torque, depends upon sustained impulse.

(This one point goes right to the heart of the automobile proposition as regards any car ever made.)

You cannot get the turning power from a motor with valves that is produced by an equal number of Elmore cylinders, or by six cylinders against the Elmore's four.

(When all is said and done, turning power is the chief thing for which you exchange your dollars in buying any car)

You must, therefore—you absolutely must—measure the efficiency of every other car's motor by that of the Elmore.

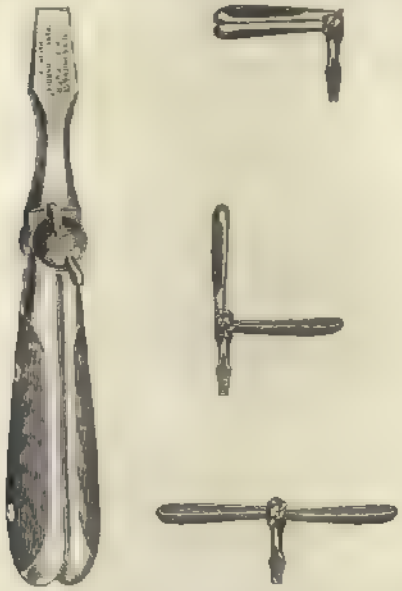
Roadster Model 25, 30 H. P., $1,200. Touring Model 25, 30 H. P., $1,250. Demi-Tonneau (Detachable) Four Passenger Touring Model 36-B, 50 H. P., $1,750.

ELMORE MANUFACTURING COMPANY

904 Amanda Street, Clyde, Ohio

A NOVELTY IN SCREW DRIVERS

H. D. Smith & Co., of Plantsville, Conn., have recently placed on the market a novel screw driver. By a very simple arrangement of dividing the handle and using a bolt and thumb nut, spotted on the inside at the joint, the handles are held rigid in any of the positions shown by the accompanying cut, thus allowing a variety of lev-



The Triple Lever "Perfect Handle" Screw Driver, also three positions in which it can be used.

erages not obtainable in an ordinary screw driver. This screw driver has the lock-in water proof and riveted handle, the same steel and temper as used in other "Perfect Handle" tools. The convenience of being able to apply all the power necessary, and with both hands on a screw driver, makes the triple lever very desirable and will no doubt be readily appreciated by all who use tools.

RAMBLER SALES BREAK RECORD

The sales of Rambler cars at the Chicago Show again broke all records, 181 cars being sold for a total of $452,500 in seven days, an average of nearly 26 cars a day at an average price of $2,500. The Thomas B. Jeffery Co., of Kenosha, Wis., has for three years held the record for sales at the Chicago Show. Last year the aggregate was $350,000 for 175 cars at an average of $2,000 and the year before 160 cars at an average of $1,900.

C. W. Forbes, or Culpeper, Va., has been appointed state agent for the Marathon cars in Virginia. Mr. Forbes, who will operate from Richmond, is now closing with sub-agencies for Marathon cars in his territory.

THE "KITTLE" OIL BURNER

The accompanying cut shows the Kittle Oil Burner, which is manufactured by Holmes & Kittle, 116 E. Seventh street, Los Angeles, Cal.

The "Kittle" Oil Burner.

This burner can be used in both Straight-in and Backshot furnaces. It uses very little steam and gives a high degree of heat. The mixer is at the rear of the burner where it is not exposed to high temperatures.

The Whiting Motor Car Co., of New York City, has taken the agency for the Mercer car, in addition to the Cunningham.

A. J. Dale is now representing the Southern Motor Works, of Nashville, Tenn., in Tennessee, Alabama, Arkansas and Kentucky.

T. J. Kennedy, of Batavia, N. Y., has purchased of Ralph C. Williams the garage at West Main and Walnut streets, and will continue to run it as the "Midway Garage."

The Chalmers Motor Co., of Detroit, Mich., reports a sale of 48 cars in Australia in the two months since the establishment of an agency there. In fact, the American car seems quite popular in Australia.

The Maine Supply Co., was recently incorporated with a capital of $20,000, and is operating a garage and repair station in Lewiston, Maine. A new four story brick block, one of the finest in the State, is under construction.

H. D. Bright, recently with the Henry & Pullman companies, is covering the southeastern territory, and F. J. Delaney, formerly with the Buick Cartercar Organization, will cover part of the western territory for the Southern Motor Works, of Nashville, Tenn.

Welch & Southergreen have opened a garage and repair shop at 80-86 Lunenburg street, Fitchburg, Mass., and are distributors for Worcester County for the Peerless and local agents for the Chalmers. Their new fire proof structure with 25 000 square feet floor space is one of the best in Worcester County. Their repair department is up to date in every particular.

NEW MINNEAPOLIS ORGANIZATION

The Minneapolis Motor Club was recently formed among the automobile dealers of Minneapolis, Minn. The object of this club is to promote the business and secure co-operation among its members and conduct contests. R. J. Randolph is president, A. E. Thompson and C. S. Marshall, vice-presidents.

Yes, this new Elmore at $1750 gives better service than the best six-cylinder ever built

Model 36-B, Five-Passenger Touring Car, 50 H. P.—$1750

Go to your Elmore dealer and he will prove to you that the progress of the Elmore engineering principle has produced to sell at $1750 an amazing efficiency not to be found in the costliest six-cylinder car.

There is no doubt that the six-cylinder is the acme of luxury and comfort of the four-cycle type

If proof of this were needed it has just been furnished by one of the foremost manufacturers of the four-cycle type of car. From this plant comes the announcement of a six-cylinder model—although the management has repeatedly said that the company would not build a car of that type.

The six-cylinder, we repeat, is the acme of luxury in the four-cycle type—but that luxury can only be obtained at a very high price This, to the minds of a great many people, is in its favor. But a great many others, who would like to enjoy its luxurious qualities, cannot afford to pay the price

The only alternative left to them is to buy an Elmore; because the Elmore is the only car on earth which not only equals but surpasses the advantages of the best and costliest six-cylinder ever built.

We realize that we are holding out to you a promise which at first glance seems almost impossible of fulfillment.

We realize that you probably consider a six-cylinder car the highest type of efficiency.

It is associated in your mind with the highest possible price—a price, perhaps beyond your means.

And now we are promising you that we shall surpass the efficiency of the best six-cylinder car ever built, in an Elmore which we sell you for $1750

We are ready however for the test—ready tomorrow for its immediate demonstration

Because we know that in the progress of the unique principle incorporated in the Elmore High Duty Valveless Engine, results more and more amazing are being developed every day

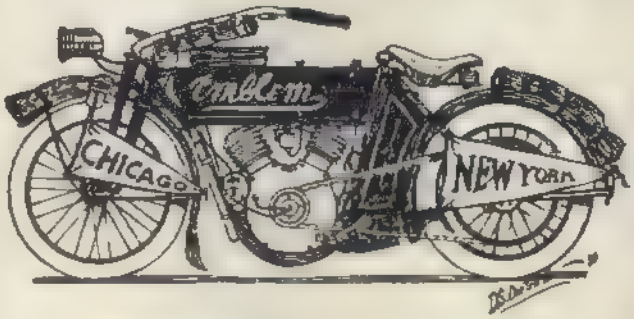
We are serenely conscious of our ability to prove to you that the Valveless High Duty Elmore at $1750 accomplishes all that the costliest six cylinder car tries to accomplish

Our catalog points out a few of the privileges which the Elmore owner alone enjoys. These privileges come to him and to him only, in excess of all the comforts which can ordinarily be bought by paying the highest price for any other car.

Send for this catalog—or, better still, see your Elmore dealer.

The Elmore Manufacturing Co., 904 Amanda St., Clyde, Ohio

THE EMBLEM



The name synonymous with all-around excellence in motorcycle construction.

Read the following testimonial received from one of our customers, to which we recently showed one of our 5 H. P. Emblem Motorcycles

EMBLEM MFG. CO.
Angola, N. Y.

Gentlemen:

The 5 H. P. Emblem Motorcycle I ordered received by express.

I must say, I have never had my wheel business for so little money. I have ridden other makes of motorcycles over the hills and valleys here, some above the Falls and some on the level, but in the machine I have the power to take them up the steepest hills and on that will bring you more every time and always ready to go—get there "Emblem."

Until the NEW "Emblem" that will make good **everytime.** Everyone says it's the BEST I ever seen here yet. Excuse poor penmanship.

Thanking you very much for your prompt way of doing business I am

Yours respectfully,

N. B. SPEARMAN

Correspondence Solicited

EMBLEM MFG. CO. ANGOLA, N. Y.

Standard Motorcycle Parts

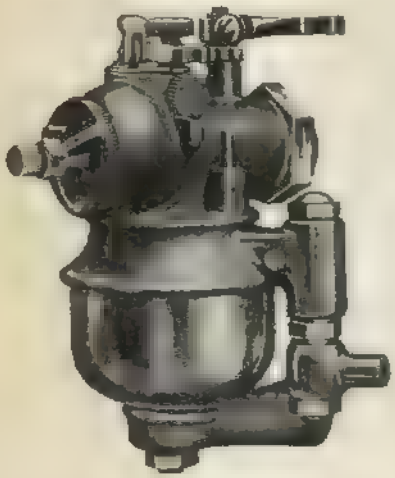
No 3 MOTOR CYCLE PEDAL

are just a little bit better than anything else of the kind on the market. That's why machines that are **STANDARD** equipped sell quicker than others.

STANDARD PEDALS wear well. They are strong and light, and the deep corrugations in the rubber hold the foot firmly and absorb vibration. They are reversible, thus enabling the rider to get the fullest service from them. Write for details of our complete line, which includes **Spokes** and **Nipples, Bridgeport, Star** and **Standard Bicycle Pedals, Sager** and **Standard Toe Clips.**

The Standard Co., Torrington, Conn.

HEITGER Carbureters



Cut is of ¾ in. motorcycle size

List, $10.50

Other types for Fords, Hupp, Buick 10, etc.

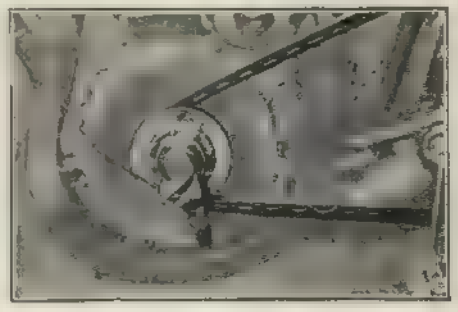
Glass or metal float bowls, separate gasoline adjustment for both low and full throttle. Gives minimum and maximum speeds, one setting. Gives 4 to 75 miles per hour according to size engine from 75 to 100 miles per gallon. Have record runs of 50 miles at rate of over 200 miles per gallon.

Being used by leading manufacturers
Handled by leading jobbers and dealers
Sold entirely on its merits
Satisfaction guaranteed or price refunded

Send for catalog

HEITGER CARBURETER CO.
1150 Beecher Street
INDIANAPOLIS, IND.

The Eclipse Free Engine Pulley



Worth $50. Price $15

A multiple disk clutch readily attached to any vehicle now [illegible] with [illegible] speed [illegible] and positive through [illegible] We are pioneers in this construction of [illegible] and hold original U. S. patents [illegible]

The construction of the Eclipse Free Engine Pulley is broadly covered by claims allowed and patents pending. We shall prosecute all infringers.

You owe it to yourself to become thoroughly posted
Write for booklet and testimonials at once
Department 2.

Eclipse Machine Company
ELMIRA, N. Y.
Manufacturers of Eclipse motorcycle and aeroplane hubs

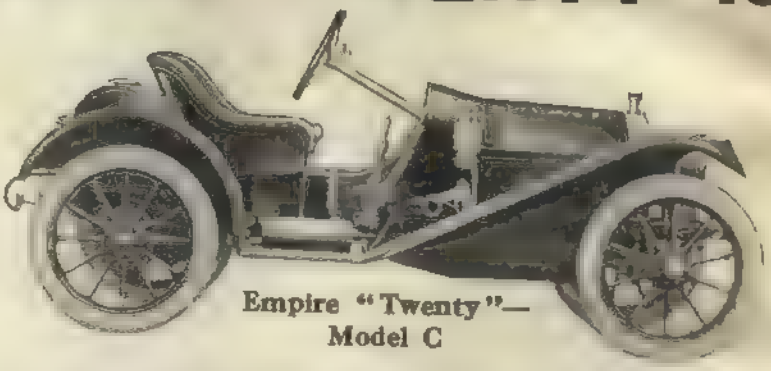
NATHAN'S

This is our trade mark. It appears on all goods we manufacture. Look for our trade mark on our representative's card through [illegible]

Here we show a few of our articles. Our Auto and Motor Cycle Catalogues mailed on request, contain cuts, descriptions and prices of many items not shown here. Special quotations on orders in dozens.

NATHAN NOVELTY MFG. COMPANY
90th Reade Street, New York City, U. S. A

EMPIRE "TWENTY" 1911



Empire "Twenty"—
Model C

Without any doubt the most exceptional value of the season

The entire plant of the Empire Motor Car Co., in Indianapolis, is devoted to the manufacture of this one made., thus making it possible to reduce production costs to the minimum.

Read the following specifications and you will agree with us that we are building the best car in America for the price.

MOTOR—T-head type, 20 H. P. quiet and efficient.

TRANSMISSION—Three speed selective type, mounted on annular bearings.

DRIVE—Shaft, through nickel steel beve gears.

FRAME—Deep section pressed steel.

IGNITION—Imported Eisemann high tension magneto.

TIRES—32" x 3½" front and rear, Q. D. Rims.

EQUIPMENT—Gas Lamps Oi side and Tail Lamps, Horn, Tools and Kit, Tire Repair Outfit, Irons on rear for extra Tire.

EMPIRE MOTOR CAR CO., : Indianapolis, Ind.

1911 Petrel

"THE ARISTOCRAT OF MEDIUM-PRICED CARS"

SEVEN MODELS SEVEN

$850 to $1600

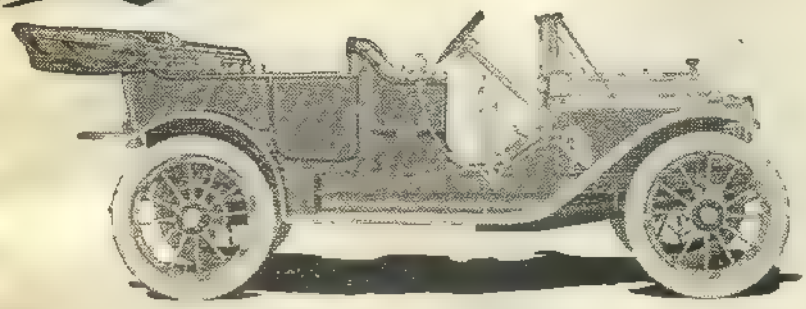
THE CAR OF PERFECT CONTROL, SILENCE AND COMFORT

If the Petrel is not represented in your vicinity, write us to-day—before the opportunity is gone. Immediate delivery.

PETREL MOTOR CAR CO., MILWAUKEE, U.S.A.

Dorris

1911 Cars



$2500, Including

Top, Windshield, Tire Carrier, Speedometer, Prest-o-Lite Tank
36 x 4 Quick Demountable Detachable Rims

Dorris Motor Car Company :: St. Louis, Mo.

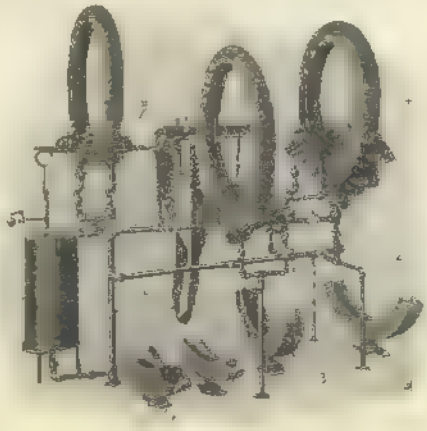
40% PROFIT

Is not an impossibility when the work is performed on a Marble-Haywood Vulcanizing Plant.

The time has come when inferior methods and machinery MUST be abandoned

The PROFIT is now going to those equipped to do satisfactory work at a minimum price.

Are you getting this profit?

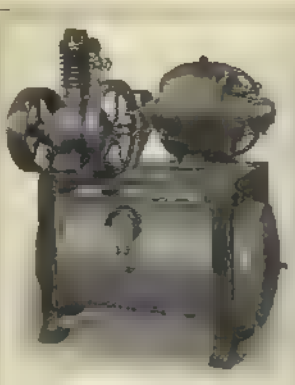


MODEL H.

Model II is the garage man's plant and enables him to do ALL tire repair work RETREADING SECTIONAL TUBES without the expense of a large boiler and the loss of floor space

Send for our Complete Catalogue and Advance Sheet

Haywood Tire & Equipment Co., N. Capitol Ave., Indianapolis, Ind.



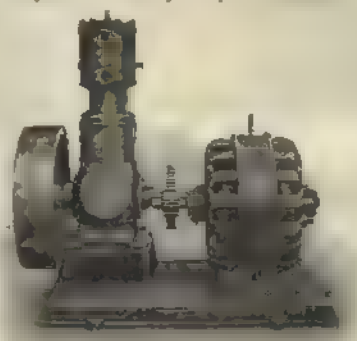
GARAGE SET. Entire pumping plant in one unit. Furnished when desired with wheels so it can be moved about garage. Supplied for any current.

The GARDNER line of pumps is manufactured by machinery of the most modern, and by workmen of the highest skill that has established reputation for **Quality.**

The pumping outfits which we are showing will meet the garages through the country, at the most reasonable cost. It is a mistake to buy a small cheap pumping outfit—as first-cost saving means a continuous up-keep expense.

GARDNER POWER PUMPING OUTFITS FOR GARAGES

Illustrated below is our **WATER COOLED** connected to motor both on common base. A self-oiling, high-pressure machine. Pump more air per size of cylinder than any compressor made



THE GARDNER AIR-COOLED COMPRESSOR. Made in two sizes, 2 x 2½ and 2½ x 3. Self-oiling, durable and dependable. *Best* air-cooled machine made

The three **PUMPING OUTFITS** shown herewith are fully described in our Booklet No. 184

Write for it

GARDNER GOVERNOR WORKS

QUINCY :: ILLINOIS

AUTOMOBILE TIRES

BIGGEST CUT PRICES ever offered in the automobile business We really think no one can beat these prices if you compare goods. If you don't like any tire bought from us on this list, if you don't think it looks good enough, if you don't think it is cheap enough, if you think some one else's tire is cheaper, send it back and get your money within two weeks provided the goods are not used. But you won't. Instead of that you will order more.

Size	Shoes	Tubes	Size	Shoes	Tubes
28 x 3	$10.00	$2.50	33 x 4	$18.00	$4.20
30 x 3	11.00	2.75	34 x 4	19.00	4.50
30 x 3½	13.00	3.50	35 x 4	21.00	5.20
31 x 3½	15.00	3.50	36 x 4	21.00	5.20
32 x 3½	15.00	3.90	36 x 4½	28.50	5.80
34 x 3½	15.00	3.90	36 x 5	31.00	6.10
30 x 4	19.00	3.90	34 x 4½	29.00	5.50
31 x 4	19.00	3.90	34 x 5	29.00	5.50
32 x 4	18.00	4.20	36 x 3½	14.00	3.50

We have every other size in stock. When ordering state whether you have clincher, cincher quick detachable or Dunlop style, so that we can fill the order properly. This is a special tire sale, and has nothing to do with any previous lists we issue. If you order, kindly mention our ad. in the Cycle & Auto. Trade Journal.

No orders filled C. O. D unless 10 per cent accompanies the order, the balance C. O. D. If you don't want to buy right now, send for our Winter cut price catalogue.

Anchor Tire Co. (Consolidated) A. H. Kasner

111 Chambers Street, New York City

Casette

PROTECTOR OF INNER TUBES

"Casette" is made of our special Gutta-Percha Felt and is practically non-puncturable.

Being loose at the inner tread is an important factor, as this allows a slight depression on the air tube at the point of contact with a nail.

The **"Casette"** engages the nail at this instant and the wheel, turning, gives an oblique pressure on the nail and the air tube is protected.

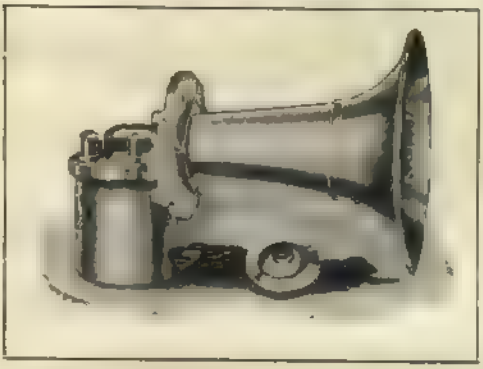
Made in Detroit—Sold Everywhere. Address all Orders to Dept. "A"

GOODFELLOW TIRE COMPANY

East Gd. Blvd. and Woodward Ave., Detroit, Mich.

ARNOLD ALARM

FOR AUTO-MOBILES



AND MOTOR BOATS

THE PERFECT ELECTRIC SIGNAL

gives a loud, clear, penetrating sound.

Can be adjusted to meet the requirements of both town and country.

Tone volume to suit all cars. Fully guaranteed.

Write for special offer.

Manufactured by

Standard Electric Company, Racine, Wis.

THOR MOTORCYCLE

WITH FREE ENGINE CLUTCH

It is a pleasure because the Clutch works perfectly.

A Multiple Disc Free Engine Clutch is now supplied on all THOR Motorcycles as regular equipment.

We have some live territory open for live Agents. Write. Yours might be open. Full particulars on request.

AURORA AUTOMATIC MACHINERY CO. :: Thor Building, Chicago

BARGAINS

MOTORCYCLE SUPPLIES

A $20,000.00 stock on hand for immediate shipment at lowest prices. Our catalog C will make you acquainted with many new ideas.

Write today

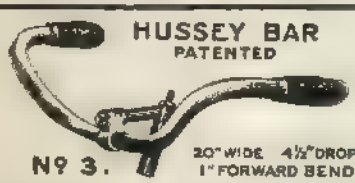
MOTORCYCLE EQUIPMENT CO.
HAMMONDSPORT, N. Y.

Minneapolis BIG 5

Two-Speed Gear and Clutch enclosed and running in oil. Write for catalog

MINNEAPOLIS MOTORCYCLE CO.
517 S. 7th Street Minneapolis, Minn.

HUSSEY BAR
PATENTED



No 3. 20" WIDE 4½" DROP 1" FORWARD BEND

Furnished on All Good Bicycles They Help You Sell

Specify Them

CONSOLIDATED MANUFACTURING COMPANY
1710 Fernwood Ave. Toledo, Ohio

F. C. CORNISH, Eastern Representative
219 Clinton Avenue Newark, New Jersey

1911 NEW ERA AUTO-CYCLE

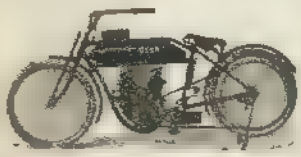
Two Speed Transmission Free Motor Motor Started by Means of a Crank Comfortably Upholstered Form Seat. Foot Board. 62 Inch Wheel Base Internal Expanding Brake Cushion Spring Fork. No Pedals

We want a conservative and riding agent in every [illegible]. You can be proud to ride a NEW ERA. The rider of a New Era A to cycle will find that after riding a New Era nothing could induce him to go back to riding the old style pedal push [illegible]. You are more comfortable in riding the New Era than you would be in riding [illegible] Auto-Cycle. In fact, the New Era is a wheel and motor. It starts like one operates. Is one and after riding the New Era for a month or more you are just as fresh and comfortable as you were when starting. [illegible] LATEST HILL CLIMBER BUILT. 4 and 6 H P single cylinder ball bearing motors

THE NEW ERA AUTO-CYCLE COMPANY 7 Dale Ave Dayton, Ohio U. S. A.

GEER Motorcycles

4 H P. Single cylinder $200 00



6-H. P. Two-cylinders $250.00

Our 1911 Models have the famous GEER long stroke engine 3½" bore by 4" stroke complete grip control and a wonderfully low saddle position

AGENTS—get in touch with our dealer's proposition at once. Other machines taken in exchange as part payment

Largest line of used motorcycles in the country at $40.00 up. Send for complete catalogs.

HARRY R. GEER COMPANY, 856 McLean Avenue, ST. LOUIS, MO.

Motor Cycle Supplies

NEW YORK DISTRIBUTORS OF
MERKEL MOTORCYCLES

Send for Catalogue and bargain sheets.
Second-hand machines, $50 up.
Special motor cycle accessories, chain tools, etc.

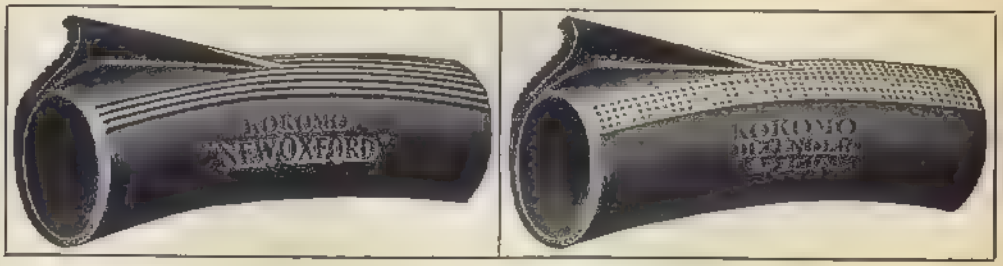
F. B. WIDMAYER CO., 2312 Broadway, New York City

1911 Proposition on Bicycles and Bicycle Tires

Now Ready

Write for Prices

SIDNEY B. ROBY CO., Rochester, N. Y.



A PAIR TO DRAW TO FOR 1911

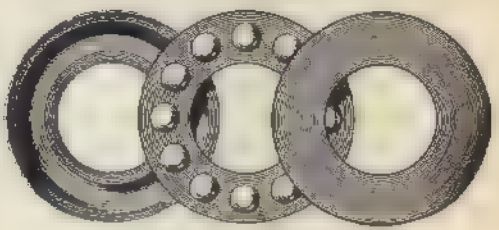
The Universal Choice of the Considerate Buyer

KOKOMO RUBBER CO.

KOKOMO, IND., U. S. A.

THE STAR BALL RETAINER CO.

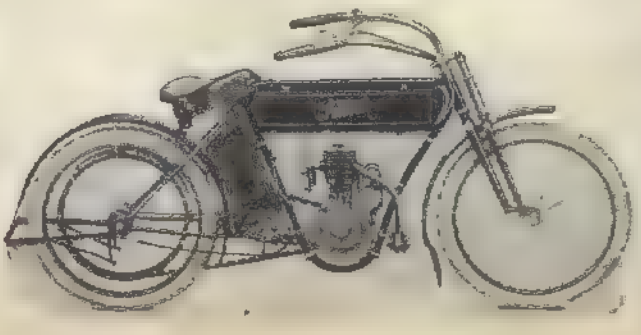
Lancaster, Pa., U.S.A.



Complete Thrust Bearing

Radial Retainers

Manufacturers of Radial Ball Retainers, Thrust Ball Retainers, Complete Thrust Bearings Special Stamping, etc.



The Motorcycle

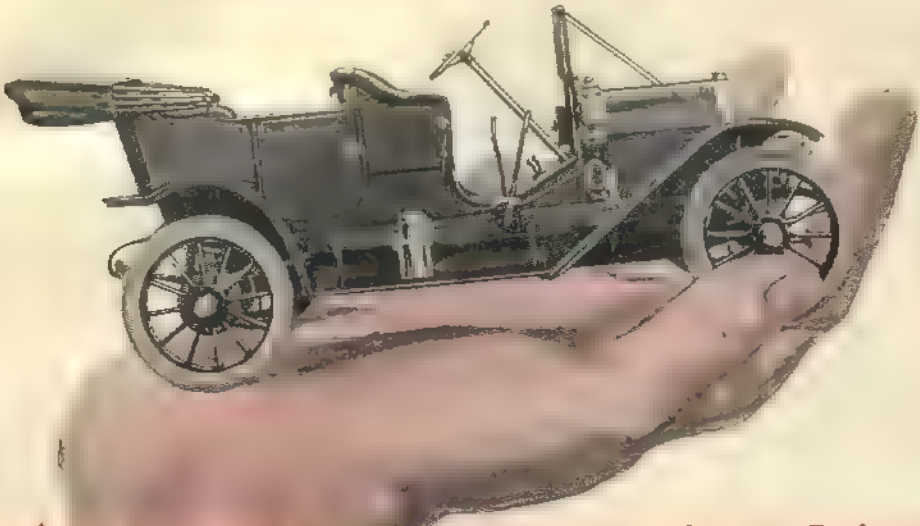
That "Makes Good" from the moment it is uncrated

Every machine road-tested before crating, and ready for demonstrating when it reaches you. No adjusting, no tinkering,—just fill the tank and give your demonstrations.

Demonstrations=Repeat Orders
Repeat Orders=Agent's Profit

4-5 H P Bal. Bearing Motor, Battery, Magneto and Two-Speed Models. Immediate delivery on all repeat orders. Write for agents' terms.

THIEM, 2237 Hampden Ave. St. Paul, Minn.



Light in Upkeep—Light in Weight

Many Great Western cars traveled 10,000 to 15,000 miles during the past season with practically no repair expense

As unusual as this is, it is common with the Great Western 40. For it is doing likewise for its owners all over the country.

If you ask one he will quickly tell you that his car is not an expense, but rather an investment.

Such economy proves that no car on earth near its price—$1600—equals the Great Western 40.

This is partly due to the extraordinary engine. Behind it are 16 years of motor-building experience. So you don't pay for experiments or mistakes.

Rated at 40, it actually develops a *full* 40. But further it transmits

Thus there is no waste of gasoline or power, but gives an ample reserve fund for emergencies.

Less power is required than for even the smallest cars. It develops 1 H. P. for every 55 pounds of weight. Think of the economy!

Great Western FORTY

Tests That Tell

It takes the worst hill in the country with ease.

And there's your test—**hills**. There's where a car shows its true self. And there's where the Great Western 40 makes good. Remember its feats in winning over cars of double its price in hill-climbing contests?

In Kansas City, Mo., one of the hilliest cities in the country—where cars are tested to the utmost—the Great Western 40 is most popular. Fifty-five were sold for use there last season.

Its flexible motor reduces wear and tear—reduces motor work and consumption of fuel.

All-Purpose Cars

If there is a car on earth ideal for all purposes, it is certainly the Great Western 40.

It is proving itself every day the greatest car anywhere near its price—$1600. So why pay more?

Low, rakish, dashing—a fascinating car. Large soft upholstering—extra foot room—34 inch tires—114 inch wheel base—finest springs—make its comfort supreme.

We are able to sell this monstrous, powerful car—equaled only at double its price—for $1600, by figuring profit on a sane, fair basis.

To fully appreciate it, you must see the car—ride in it—examine it. It has every desirable feature of the costliest cars.

So write us today for name of nearest dealer, and receive free our beautiful Art Booklet.

New Dealers

We have an excellent proposition for a few live-wire dealers—men of character—who want to sell an exceptional car—5 types—backed by responsible, conservative makers. If you are the right man, write us today.

THE GREAT WESTERN AUTOMOBILE COMPANY
DEPT. 24, PERU, INDIANA

(For Automobile Lubrication)

USE

HAVOLINE OIL

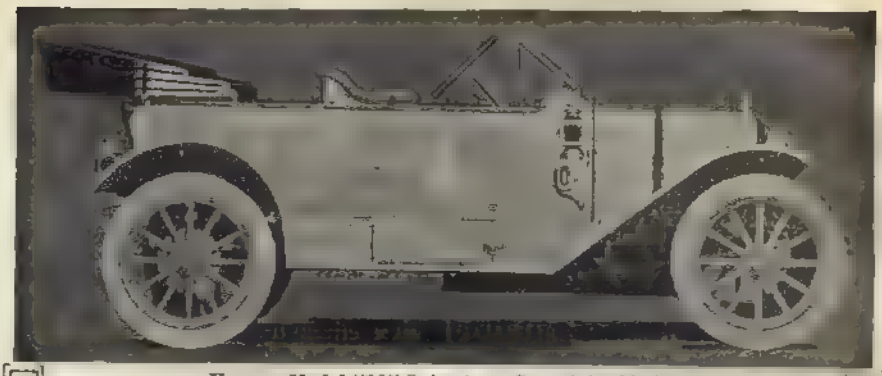
"It Makes a Difference"

Write for Booklet on "The Common Sense of Automobile Lubrication"

HAVOLINE OIL COMPANY, 135 William St., New York

All Garages All Dealers

W. P. FULLER & CO., Agents all Pacific Coast Cities



Haynes Model "20" Suburban, Complete, $2100

TIME is the *test* that *tells*, and the Haynes Car stands *first* in the proof of *years*. It marked the beginning of automobile manufacture in America.

Because it was the pioneer—the *parent* car—the Haynes had the benefit of years of priceless experience, years of perfecting and refining—*before the other cars began*. And because it was *right from the start*, it has *kept* its lead. Always a good car—every season a better one.

Frankly, the new 1911 Haynes fore-door, five-passenger Touring Car at $2100, complete—and the Haynes Suburban, four-passenger, same price—represent the greatest *real value* on the automobile market. There is *no* reason for paying *more*—good reason for *not* paying *less*.

Let us send our beautiful new catalog and convincing *Book of Evidence*. Mailed on request.

The Haynes "All-On" Equipment, Silk mohair top with side curtains and dust cover, $75 Warner Autometer, folding glass front, tire holders, robe and foot-rail in tonneau, Gray & Davis gas headlights, two oil sidelights, tail lamp and type B. Prest-O-Lite tank.

HAYNES

HAYNES AUTOMOBILE CO.
Kokomo, Indiana

Hudson Colby Co., 121 Massachusetts Avenue, Boston Mass.

THE SWINEHART NON-SKID TIRE

In this tire some new ideas have been incorporated which seem destined to work out to the user's complete satisfaction, both as regards preventing skid and side-slip and the wearing qualities of the tire itself.

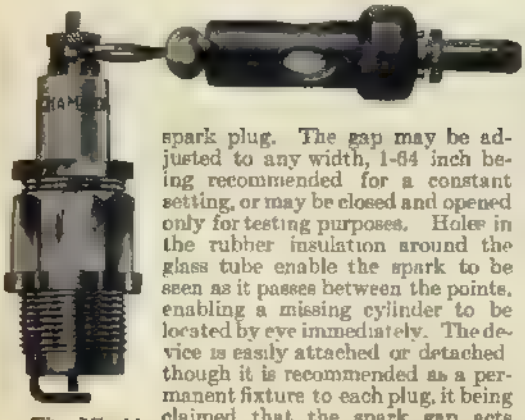
Section of the new Swinehart Non-Skid Tire.

The tread is composed of a series of ridges, crossing diagonally. Each ridge is continuous and diamond-shaped indentations are formed. The ridges taper off at the outer edges of the tread.

The edges on which wear can occur are reduced to the minimum, because of the continuity of the ridges. Each ridge joins and reinforces the others. The ridges taper off flush with the sides of the casing, affording no starting point for separation from the tread. The depressions, in use, grip a wet road or street with certainty, the "flow" of the rubber ridges, as the tire rolls along, creating a vacuum in each depression and effectively eliminating a tendency to slip or slide. This tire is the product of the Swinehart Tire & Rubber Co., Akron, Ohio.

THE MISSKIP DETECTOR

The Champion Spark Plug Co., of Toledo, Ohio, is putting on the market a new device for detecting missing spark plugs. This is the illustrated Misskip Detector, a carefully insulated spark gap to be attached to the



The Misskip Detector.

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NEW "BOSCH" DUPLEX SYSTEM OF IGNITION

In all of the Bosch dual systems, manufactured by the Bosch Magneto Company, 223-25 West 46th street, New York City, the coil-and-battery circuit is absolutely distinct from the magneto circuit, except for the distributor and spark plugs, which are used in common by both. Each system has its own source of current; its own transformer; its own circuit-breaker, etc., and the smallest possible number of parts are used in common.

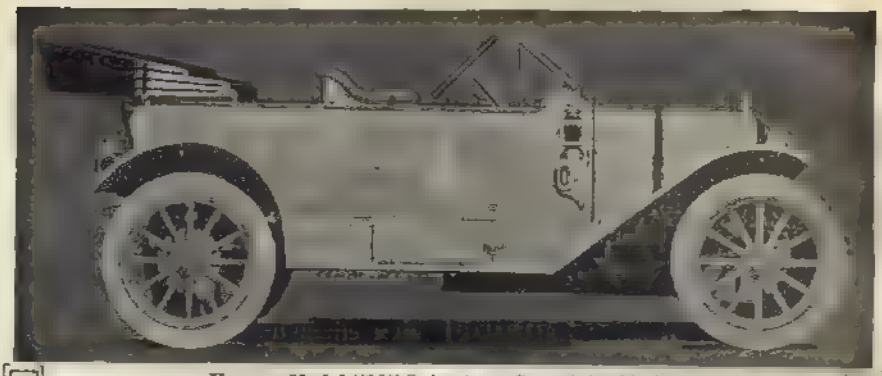
In the Duplex System, on the contrary, the battery current is utilized to supplement the current existing in the magneto armature at very low speeds. The magneto is fitted with a commutator, which throws the battery current into phase with the magneto current. A simple primary coil is used, but this is for the purpose of offering an Ohmic resistance to prevent the rapid exhaustion of the battery during those portions of the revolution when the interrupter is closed. When the platinum points are together, the primary magneto circuit and the battery circuit are closed, and are in parallel; when the platinum points separate, the battery circuit and the primary magneto circuit are in series. The Duplex System gives self-starting on a press button, but with the starting of the engine, both battery and magneto are employed.

When the switch is thrown to the battery side, with the speeding up of the engine, the battery consumption shows a sharp reduction, even with the switch left in this position; and at high speeds, not only does the battery cease to give current but there is an actual flow of current in the opposite direction. In other words, at high speeds there will be a charging effect.

"MYHTIB" TIRE PRESERVER

This is a secret process compound in appearance quite like rubber, and fully as flexible, which, when applied to the outside of the tire casing, in a similar manner as the application of a thick paint—fills the pores of the rubber tire, and seals them up, thereby rendering the tire casing absolutely air tight, water and oil proof. This product is sold in cases at $10, and half cases at $5. One case is sufficient for 4 large tires or 6 small ones. It is manufactured by the Myhtib Rubber Tire Preserver Co., Inc., 373 Asylum street, Hartford, Conn

The Lackawanna Mfg. Co., of Newburgh, N. Y., has purchased part of the plant of the Newburgh Steam Mills, with 1000 feet of docking, and are largely increasing their season's output.



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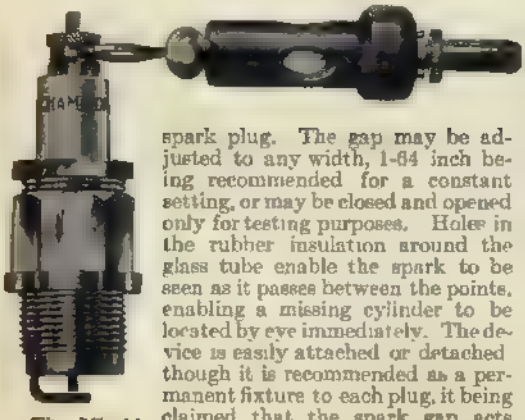

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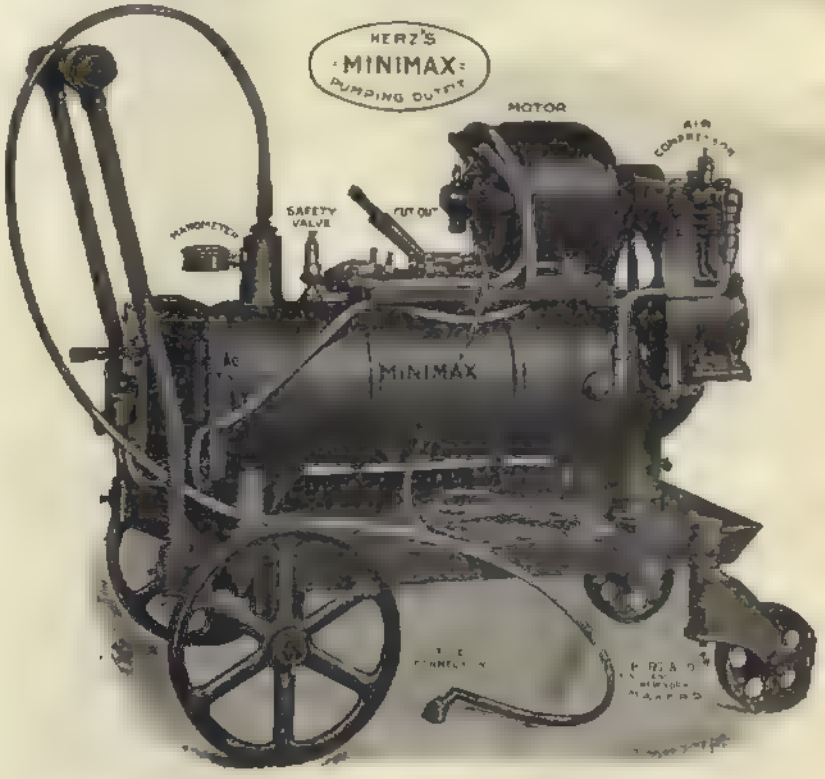
HERZ'S GARAGE PUMP



Total Height, 27 in.; Length, 35 in.; Weight, 230 lbs.; Double Cylinder Air Compressor, Piston Rings; Splash Lubrication.

It does away with those expensive to install and more expensive to run stationary pipe lines

To run the Minimax costs practically nothing. Made for any kind of current

Just Wheel It Where It's Needed and Connect to Nearest Lamp Socket.
The Tank Will Hold Enough Air to Inflate Four Tires Outside of the Garage.

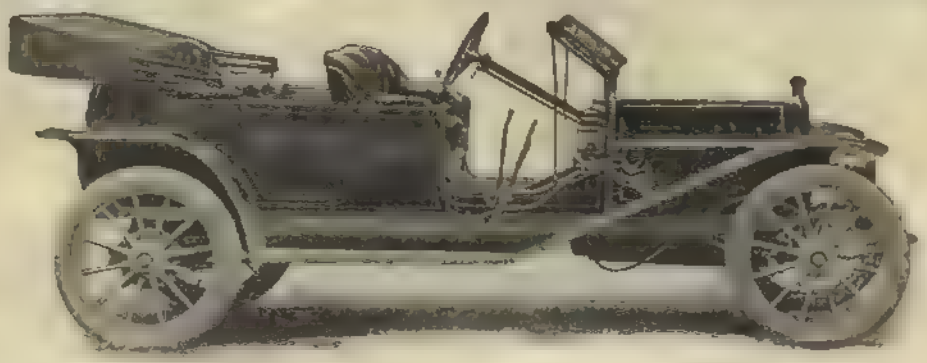
150 Pounds in Three Minutes

BE MODERN! SAVE MONEY! SAVE TIME!

Write Us at Once for Full Particulars.

HERZ & CO., Civil Engineers Puck Building, New York

It's here—in first cost and after cost, the most economical car in the world



20 H. P.—4 cylinders—4 passenger—sliding gears—Bosch magneto—110 in. wheelbase
Price, F. O. B. Detroit, including gas lamps, piping and generator, 31 x 3½ in rear tires, shock absorbers in front; three oil lamps, tools and horn as regular equipment
Top, windshield and speedometer extra.

$900 Touring Car — Hupmobile — $900 Touring Car

GUARANTEED FOR LIFE

Are you one of those who have felt that a touring car was beyond their means? Hundreds like you now find themselves eligible to ownership of the new $900 Hupmobile. In first cost and in assured economy of operation, it makes a touring car possible to scores who have not dared consider one before.

The new Hupmobile banishes three bugaboos which have always confronted the touring car buyer:

(1) The fear that a low price meant poor construction.
(2) The fear of frequent repair
(3) The fear of a high cost of upkeep

Fear No. 1 is driven away by the life-long guarantee—and the magnificent record of thousands of Hupmobiles

Fear No. 2 is left "without a leg to stand on" by this same life-long guarantee.

Fear No. 3 meets its Waterloo in the proof presented by hundreds of owners that in view of the service rendered, a Hupmobile, cared for at home, is cheaper than street cars or horses.

So you are confronted with an entirely new economic proposition.

If a touring car would make life brighter and healthier and happier—

And you can afford to pay for that inestimable boon a first cost of $900, and an after-cost about equal to the average family street car expense, then buy a Hupmobile, with implicit confidence in its rock-ribbed, life-long guarantee.

Buy it, too, with this thought in mind:—

That the Hupmobile policy has always been to carry out every promise to the letter.

Hupp Motor Car Company

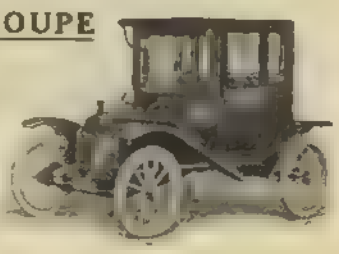
DETROIT Dept. A MICHIGAN

HUPMOBILE RUNABOUT

Runabout, $750.—F. O. B. Detroit, including 3 oil lamps, tools and horn. Top, windshield, gas lamps, tank or generator, speedometer and trunk rack extra

HUPMOBILE COUPE

Coupe, $1150.—F. O. B. Detroit Equipment includes electric headlights, combination oil and electric dash and tail lamps, batteries and wiring; folding seat for third person; shock absorbers in front; 31 x 3½ inch rear tires.

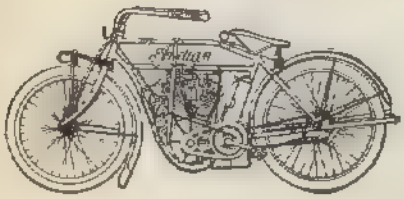


PROVES ITS SUPERIORITY

THE INDIAN

Wins English Tourist Trophy

GREATEST RACE IN THE WORLD



187 miles, against best machines and riders ever seen, climbing Snaefell Mountain 5 times.

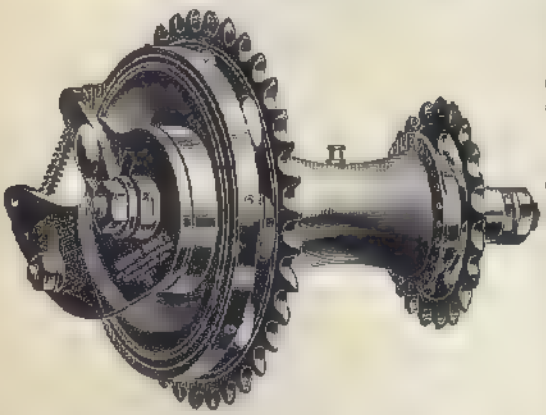
INDIANS 1—2—3

Catalog P tells all about these wonderful motorcycles

THE HENDEE MFG. CO. :: Springfield, Mass.

CHICAGO SAN FRANCISCO LONDON

Description of New 1911 Corbin Duplex Band Brake



Model No. 18, Chain Drive

Length over all, outside of cones, 6⅝ inches
Chain line (both sides) - - 1¾ inches
Spoke holes - - - - - 36 & 40 inches

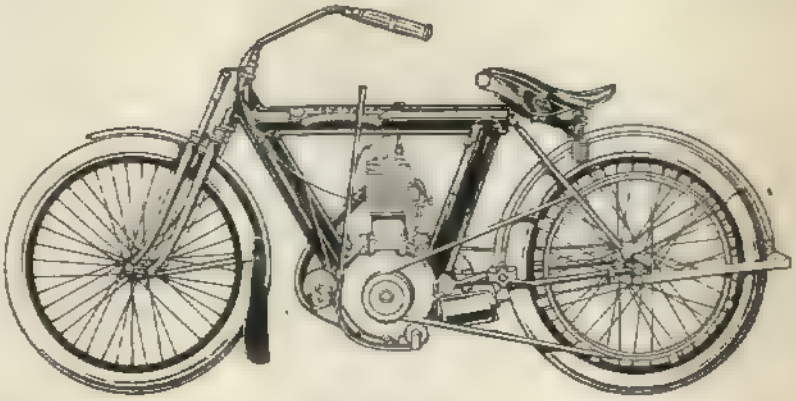
In offering the **1911 Corbin Duplex Band Brake** to the Motorcycle Trade, we do so knowing that it is the most effective Motorcycle Brake on the market. Our **1911 Corbin Duplex Band Brake** differs in principle from any Band Brake made heretofore; in that the principle of flat bands has been discarded for a new type triangular friction band, fitting a V-shaped drum larger in diameter than our previous models, giving 50 per cent. more braking surface. The lever mechanism has also been changed so as to overcome all interference with the chains. The releasing mechanism is entirely new and outside of the brake, acting directly on the end of the brake band, making its action easy and reliable

Complete Catalogue on request.

Corbin Screw Corporation :: NEW BRITAIN, CONN.

New York Chicago Philadelphia

Victory Follows Victory!



PIERCE

Pierce Single-Cylinder and Four-Cylinder Models have won victories in every endurance contest ever entered

THE MORE RECENT TRIUMPHS ARE:

Cleveland Endurance Run, May 28-29-30—Two perfect scores.
Philadelphia to Atlantic City, June 26—Two perfect scores.
San Francisco Endurance Run, July 2-3 One perfect score
Seagirt Hill Climb, July 1—One perfect score
GRAND PRIZE, Buenos Aires Centennial Exposition, 1911.
International competition—Pierce received sole award.)

Besides the above recorded records, Pierce machines have otherwise won fame for themselves particularly in everyday service and we are justified in claiming to have the very finest product on the world's market

Dealers and riders should write us to-day. We can convince you of Pierce superiority and the advantages of doing business with us

We also offer for sale Pierce bicycles which have won 85% of all speed records in the world

Everyone should have our catalogue "E."

The Pierce Cycle Company, Buffalo, N. Y.

Pacific Coast Branch: Oakland, Cal.

"Less Haste—More Speed"

Proven True of Inter-State Policy

A dependable watch is not hurried in the making.

It takes time to cut a great diamond.

If a motor car is shot through the factory, its parts hurriedly turned out and assembled into what acts like a real automobile for only a few months, the buyer of that car naturally regrets his choice. He is liable to look upon all pleasure cars as luxuries.

It was a *mighty* expensive luxury to some hundreds of thousands who went motor-mad and now repent their ownership of an "assembled" or a "we-turn-out-so-many-hundred-a-day" cars.

Too many cars were "turned out" into the world to fill that great unhealthy demand. The enemy of the automobile today is the man who blindly plucked the "citrus car," the unripe variety of automobile.

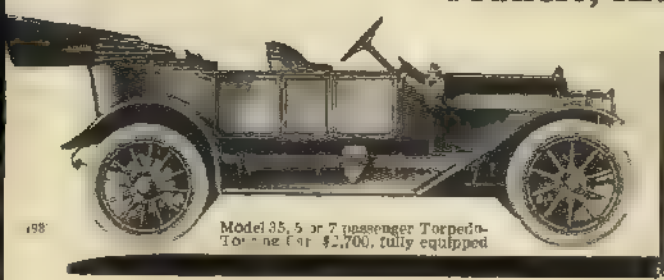
The slogan, "Less haste, more speed," nailed to every wall of our factory for three years, has held our output down to where it belongs. The first cars we built were *weeks* in the factory. We have been slow and orders-behind ever since. But we *won't* hurry so fast that the tiniest bit of construction is slighted.

Therefore, "more speed" toward nation-wide popularity. Now we have a larger factory and we build more cars—but no faster than ever.

And our "high-quality-sane-price" idea is simply meeting *magnificent* applause. We have demonstrated that it *can* be done—the building of a perfect and long-life car at a reasonable cost.

New Catalog—tells more and is free to all interested. Drop a card to

Inter-State Automobile Company
Muncie, Indiana



Model 35, 5 or 7 passenger Torpedo-Touring Car $2,700, fully equipped

TEAR OFF THIS REMINDER

Inter-State Automobile Co. — CATJ3
Muncie, Ind.

Send me your catalog.

Name

Address

Jackson

UNIT POWER PLANTS
KEEP OIL IN AND DIRT OUT

Ten Years of Successful Production

Model 51, $2200—5-passenger Touring Car with provision for two extra seats. Motor 4¾ x 4¾. 120-inch wheel base. Wheels 36 x 4. Also furnished as a four-passenger Tourabout.

Model 41, $1700—5-passenger Touring Car. Motor 4½ x 4½. 110-inch wheel base. Wheels 34 x 4. Also furnished as a four-passenger Tourabout.

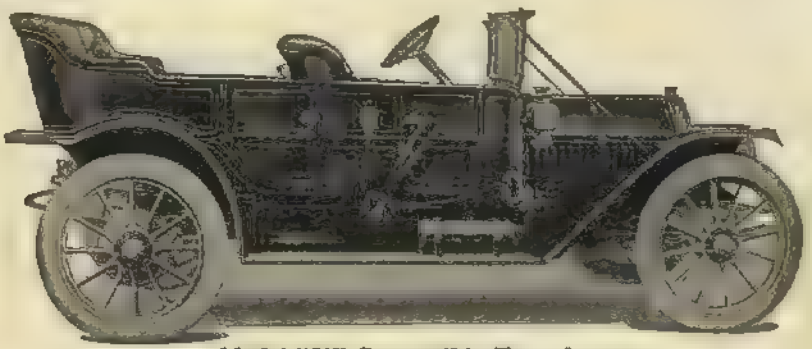
Model 38, $1650—Full Torpedo—left hand drive—center control. Motor 4½ x 4½. 115-inch wheel base. Wheels 34 x 4.

Model 35, $1250—5-passenger Touring Car. Motor 4 x 4. 105-inch wheel base. Wheels 32 x 3½.

Model 30, $1250—5-passenger Touring Car. Motor 4 x 4. 105-inch wheel base. Wheels 32 x 3½.

Model 29, $1000—2-passenger Roadster—Gasoline tank at rear. Motor 4 x 4. 100-inch wheel base. Wheels 32 x 3½.

Convertible Torpedo—Models "51" and "41" will be fitted with removable front doors and panels at an extra charge of $50, and Models "35" and "30" without extra cost.



Model "51" Convertible Torpedo

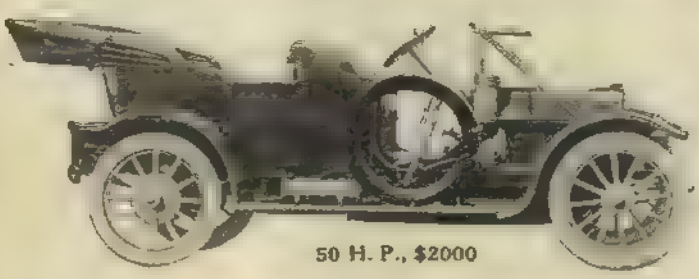
Jackson Automobile Company

Jackson, Michigan **Licensed under Selden Patent**

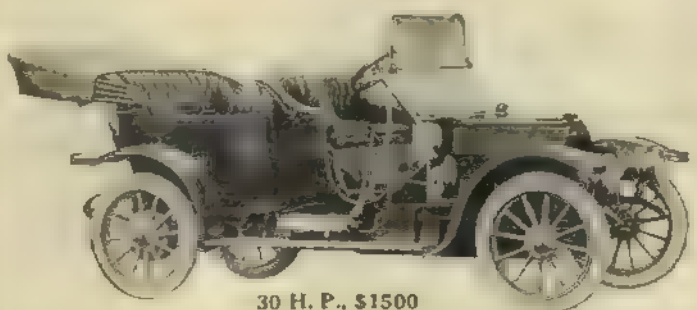
Write for Catalog "A"

KISSEL KAR

Extra generous wheel base, exceptional refinement of mechanical detail, and ¾ elliptic springs of special construction make the Kissel Kar a car of notable riding comfort, roominess and luxury –a car to be singled out for its silence, luxurious appointments, striking symmetry of design, and general high character of appearance and construction. Send for Free large Portfolio fully illustrating and describing seventeen Kissel Kar models.



50 H. P., $2000



30 H. P., $1500

30 H. P., $1500

Five passenger [illegible] Touring Car $1500. Limousine $1700. [illegible]

50 H. P., $2000

[illegible] Touring Car $2000. Limousine $2400. [illegible]

6 cyl., 60 H. P., $2500

[illegible] Touring Car $2500. [illegible]

Kissel Kar 3-Ton Truck

[illegible] H. P. $3,000. All steel frame.

Write for Illustrated Portfolio.

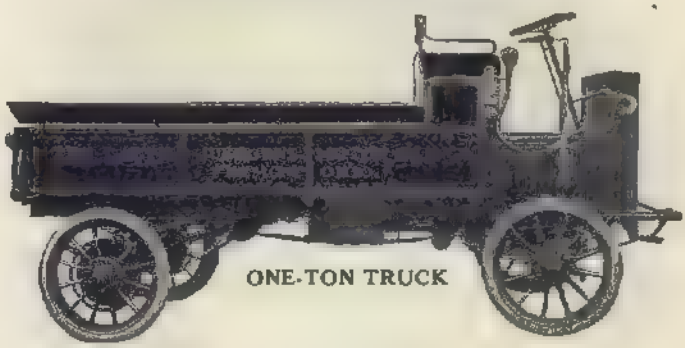
Kissel Motor Car Co.

Licensed motor vehicle manufacturers

150 Kissel Avenue
Hartford, Wis.

The Lauth-Juergens

One, Two and Three-Ton Trucks



ONE-TON TRUCK

Guaranteed for Life

The motors in the Lauth-Juergens one, two and three-ton trucks are guaranteed against defective workmanship and material for the life of the truck—CAN YOU ASK MORE?

THE LAUTH-JUERGENS TRUCKS are the latest and most efficiently built trucks to be had anywhere in this country, regardless of price or make. They hold an unquestionable reputation for speed, strength and endurance and are built for years of hard service. They are constructed of the best materials obtainable, bear the finest workmanship the world affords and are manufactured in our own shops—TRANSMISSION, JACK SHAFT, CLUTCH, GEARS AND ALL. That's why Lauth-Juergens trucks are real delivery insurance. Send for complete specifications and our 1912 catalogue telling the story of another great success in motor truck building.

Specifications of One-Ton Truck

MOTOR—Rutenber, four cyl. water-cooled 4" bore, 4" stroke.
CARBURETER—Schebler, float feed type.
IGNITION—Bosch high tension magneto, dual system.
TRANSMISSION—Selective type, four speeds forward and reverse.
CLUTCH—LJ Patent disc, 3 piece, simple and positive.
BRAKES—Two internal on rear axle, two external on jack shaft.
DRIVE—Double chain.
AXLES—Ball bearing, front, 1½" rear 2"
WHEELS—36" front and rear, artillery style.
TIRES—30 x 3" front, 30 x 3½" rear.
FRAME—Solid angle steel 2 x 3" steel tied by long truss rods to prevent sagging.
WHEEL BASE—105"
TREAD—56"
EQUIPMENT—3 lamps, horn, oil can, full set of tools and jack.
WEIGHT—Chassis with driver's seat, 2600 lbs.
PRICE—Chassis with driver's seat, $1950.00 F. O. B. Fremont, Ohio.

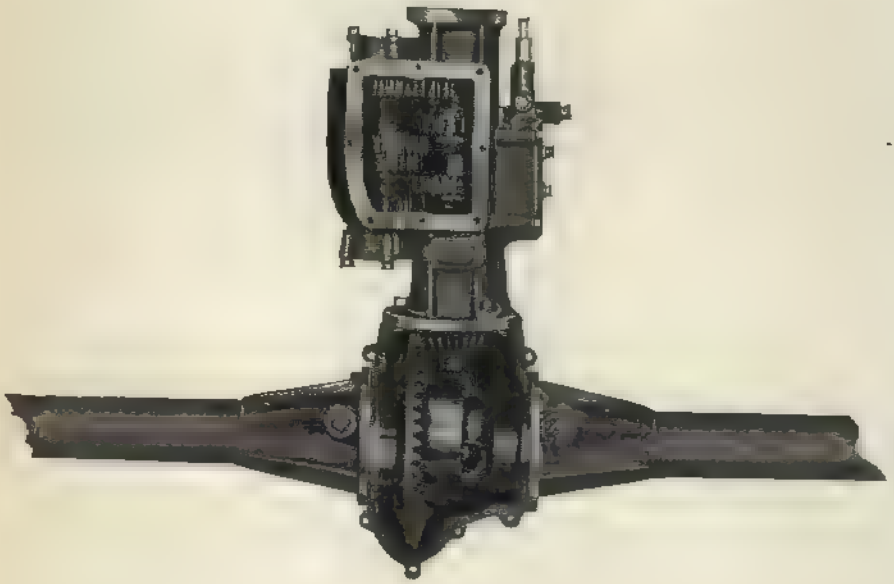
Reliable agents should communicate with us at once for 1912 territory

ADDRESS

Lauth-Juergens Motor Car Co.

FREMONT, OHIO

COVERT



Covert Transmissions and Jack Shafts for motor trucks form a unit. For this reason, this type of construction offers many advantages not found elsewhere.

Among some of the most prominent advantages is the ease with which the parts can be assembled—the absolute certainty of their being in proper alignment—and the absence of numerous complicated parts.

Lower costs of construction combined with greater simplicity and higher efficiency, are the features which place—not only the truck, but the truck builder—ahead of his competitor.

COVERT MOTOR VEHICLE COMPANY

Lockport, New York

The success of Baldwin drive chains on a commercial car, is due to the careful selection of material used. This has only been accomplished as a result of long experience. Buy your chains from those who know how to give good results.

SPROCKETS

We are prepared to make sprockets in quantities at interesting prices. Let us quote you.

Baldwin Chain & Mfg. Company

WORCESTER, MASS.

AGENTS: Mr. H. V. Greenwood, 150 Michigan Ave., Chicago, Ill.
Mr. C. J. Iven, Rochester, New York
Mr. M. A. Bryte, 788 Mission St., San Francisco, Cal.

LEFEVER

For over 50 years we have been manufacturers of the world-famous

LEFEVER SHOTGUNS

An examination of one of our

$1000.00 GRADE GUNS

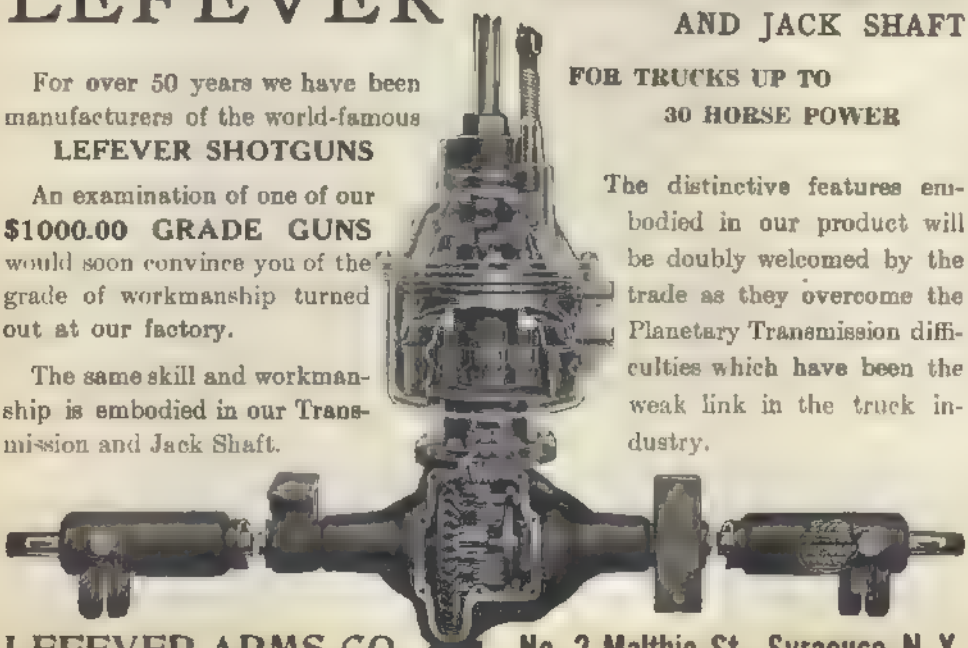
would soon convince you of the grade of workmanship turned out at our factory.

The same skill and workmanship is embodied in our Transmission and Jack Shaft.

PLANETARY TRANSMISSION AND JACK SHAFT

FOR TRUCKS UP TO 30 HORSE POWER

The distinctive features embodied in our product will be doubly welcomed by the trade as they overcome the Planetary Transmission difficulties which have been the weak link in the truck industry.



LEFEVER ARMS CO. No. 2 Malthie St., Syracuse, N. Y.

McIntyre

Commercial Power Wagons

The McINTYRE Commercial Power Wagon has proved its adaptability to every commercial need It has been aptly called "The World's Greatest Power Wagon" and is making good wherever it is in service. There has never been a commercial power wagon made that—price considered—could compare with the McINTYRE

On account of the popularity and increased sale of our power wagons, we have increased our manufacturing facilities and are in a position to consider applications on the part of live, up-to-date dealers. First come, first served.

☛Investigate the McINTYRE Heavy Duty Motor with the automatic governor, which absolutely prevents overspeeding—the source of 90% of all motor truck troubles. Note the following specifications and then write for further particulars:

Capacity—2,000 pounds.
Wheel Base—119 inches.
Tires—Solid rubber, 2½ inches.
Horsepower—24
Cooling—Water cooled.
Speed—2 speeds forward, 1 reverse, 4 to 12 miles an hour.
Mileage Capacity per Gallon—12 to 15 miles
Ignition—Dual System magneto and dry cells
Equipment—3 oil lamps, horn, tools and jack
Net Weight—2,200 pounds.

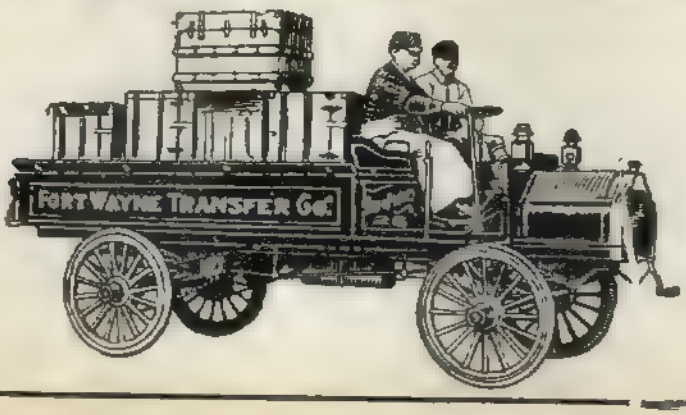
Bore—5½.
Stroke—4½
The owner, not the driver, controls the speed Built for hard service.

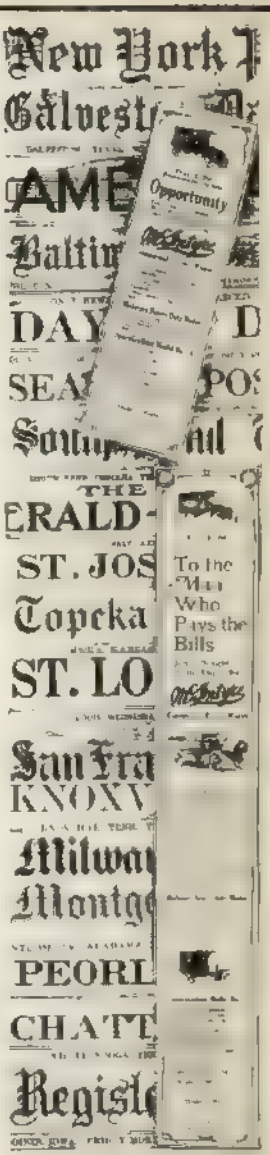
SPECIAL FEATURES. PRICE $1350

Accessibility
Simplicity
Abundance of Power
Mechanical Correctness
Sturdiness
Guarantee
Large Bearings
Automatic governor on engine, which absolutely prevents overspeeding

The Motor Truck that will positively "stand up" under any and all conditions and the whole guaranteed to come up to all specifications.

W. H. McIntyre Co., Auburn, Ind.





COUPON

W. H. McIntyre Co., Auburn, Ind.

Gentlemen: Please send me full particulars regarding your national newspaper campaign, advertising your commercial power wagon over the dealer's name.

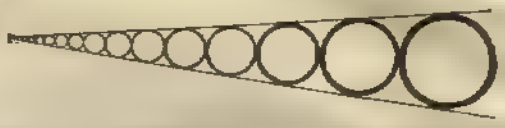
Name. . . . . .

Address .

City .State .

AUTOMOBILE TUBING

Seamless Brass and Copper Tubing



of all kinds,—any size, any gauge, any temper.
From ⅛″ down to the finest.

We are supplying many of the largest and best automobile concerns in the country with tubing. Why not let us quote you on your requirements? Our **QUALITY** is guaranteed, our prices are low as quality will allow, and prompt deliveries are guaranteed. Could you possibly ask for more? **Correspondence solicited.**

ROME HOLLOW WIRE & TUBE COMPANY, Rome, New York

W. F. S. MOTOR CARS :: *1911 Models*

Four Cylinder, 20-25 Horse Power. Bore, 4⅛″; Stroke, 5¼″

Five-Passenger Touring Car **$2250**
(With Fore-Door and Oil Lamps only.)
Runabout, with Rumble Seat . . . **$2150**
Torpedo Type Runabout **$2200**
(With Beetle Back and Folding Rumble Seat)
Four-Passenger Gunboat Tourabout . **$2300**
Five-Passenger Limousine **$3200**

The W. F. S. is unquestionably the greatest value offered to-day, being built throughout of the highest grade material.

The W. F. S. is for those who demand a superior car—a car that combines **power, simplicity, style** and **economy.** It has no superior at any price.

We invite correspondence from agents whose clientele demand a car of the **highest grade.**

THE W. F. S. MOTOR CAR CO. : 4224 Ludlow St., Philadelphia, Pa.

THE GUS BALZER CO.

1777-79 Broadway, Dept. F
IN THE CITY OF NEW YORK

Write for New, Artistic Catalogue, Showing Beautiful
LIMOUSINE BOUQUET HOLDERS

STEVENS IGNITER, ONLY $20.00
Including Combined Timer and Distributer, Switch and Coil
STEVENS CARBURETOR, ONLY $7.50

Monograms and Trade Names, Adjustable Side Mirror
Tire Air Tank, "Air-on-Tap"
License Plates and Holders, and Other Accessories

FEGLEY TIRE CHAINS

THE HAND-OPERATED CHAIN

Instantly adjusted, attached or detached, with simply your two hands—a twist, a snap, and the Fegley is on or off. No tools needed.

Positive "anti-skid." Perfect fit; no noise; no injury to the tire. Adjusting anchor is very useful when driving in the snow or mud; detachable; can be instantly fastened to chain when desired. Write for circular.

FEGLEY TIRE CHAIN COMPANY, 301 West End Trust Bldg., Philadelphia

Maher Duplex Multi

The Only Genuine *Self-Cleaning* Spark Plug on the Market

The MAHER Duplex Multi Spark Plug has a double annular spark gap. One works as an auxiliary to the others.

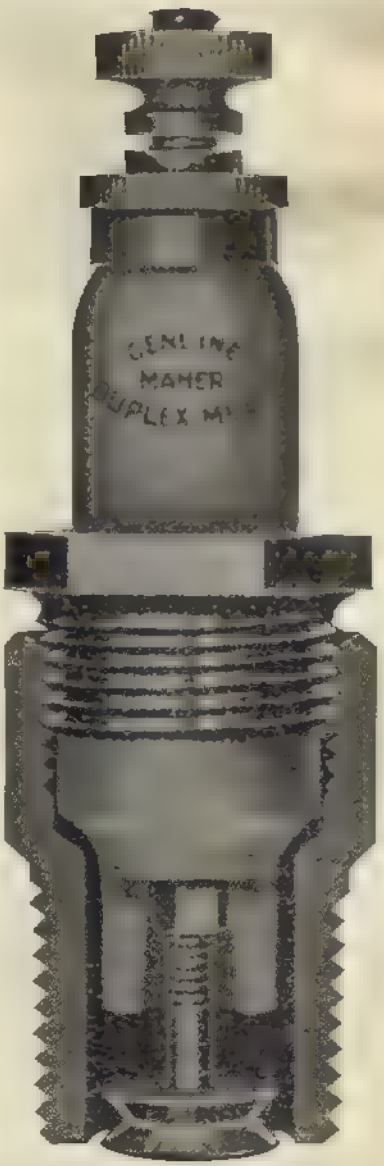
Ordinarily the initial spark crosses the upper gap. Should this spark fail, the lower gap furnishes an auxiliary, thus ABSOLUTELY INSURING PERFECT SPARKING and IGNITION.

The lower flange on electrode closes the end of the spark plug in such a manner that it acts as a baffle and prevents oil from entering.

This makes the MAHER DUPLEX MULTI an oil-proof and soot-proof plug.

The ignition takes place in the cavity of the plug. This has been filled with gas by the compression stroke. The result is that the ignited gas flames forcibly out into the cylinder, insuring perfect combustion and carrying out automatically all soot and foreign matter.

DEALERS—write for trade discounts at once. Get the Maher Duplex Multi in stock now. You need it.



Duplex Multi Spark Plug Company

Devil's Lake North Dakota

Patented Feb. 7, 1911. Other Patents Pending.

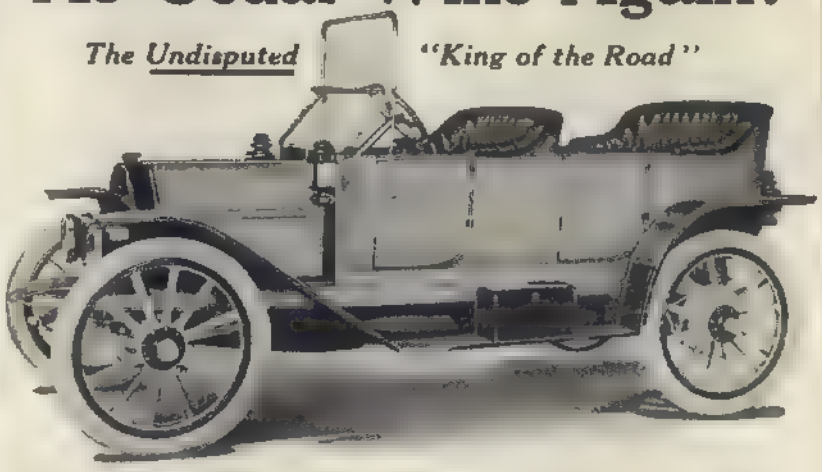
PRICE, $1.25

If your dealer does not handle the MAHER DUPLEX MULTI, we will send you a set by mail on 5 days' trial. Money back then if the plug isn't satisfactory

Moline

As Usual Wins Again!

The Undisputed *"King of the Road"*



This Time Victor in Annual Economy Run

Once more the "Dreadnought" Moline demonstrates its *supremacy* on the road. Already *"King of Reliability and Endurance Contests,"* it now returns the winner in the *ANNUAL FUEL ECONOMY RUN,* Touring Class, held May 25, Chicago to Milwaukee and return, covering a distance of 192 miles and making the remarkable record of 19.3 miles per gallon of gasoline with 5 passengers.

Long Stroke Motor a Marvel

The secret of the Moline's consistent, "unbeatable" performances in the numerous contests it has won, is its **Long Stroke Motor.** No car, no matter what the price, has shown such high class, victorious efficiency and such wonderful, dependable roadability.

In the 1910 Glidden Run, the Moline won the Chicago Trophy and made **the best record of any car entered in the entire run,** regardless of size, power or price.

In the 1,000-Mile Chicago Reliability, a pair of Moline's won the Team Trophy; one tied for the Roadster Cup, and in this, the latest contest of importance —the ANNUAL ECONOMY RUN the Moline again proves its supremacy. Now

King of Endurance Runs
King of Reliability Runs
King of Economy Runs—

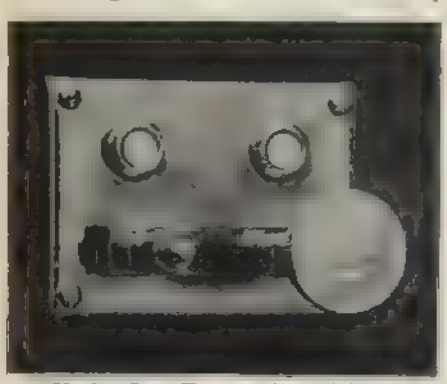
the Moline stands today **supreme,** at the head of all competitors—a tested, **proved** masterpiece of motor efficiency and dependability.

May we send you catalog No. 37, giving full detailed information of the Moline and its surprising Long Stroke Motor.

MOLINE AUTOMOBILE COMPANY
37 Keokuk Street, East Moline, Ill.

MARION LOW VOLTAGE GAS LIGHTERS

This device is manufactured by Brockett & Gorham, of Marion, O., and is offered as something new for the 1912 season. It consists of a valve plate, which has a gas controlling valve and a shut-off valve—two burners for the lamps, and fifteen feet of duplex wire, which is sufficient to wire any ordinary automobile. There are directions for installing this device which are so simple



Marion Low Tension Gas Lighter

that any person with ordinary ability can install it. It does not require the services of either a mechanic or an electrician and it is as simple of installation as an ordinary door bell.

This system utilizes a current of but seven volts, so that, even if the wires are covered with oil or grease, there is not any danger of the insulation breaking down.

The flow of gas is controlled by two needle valves, the one acting as a shut-off valve, to turn the gas either on or off, and has a permanently fixed hand wheel attached to it: the other valve, the stem of which is squared to fit the wrench used on the gas tank, is for the purpose of making a fixed adjustment of the flow of gas to the lamps, which, once regulated, does not require further attention The valve first spoken of (with the hand wheel) can also be used for lowering the lights below the ordinary height required, when driving in portions of cities, where bright lights are not allowed. The price of the outfit is $10.

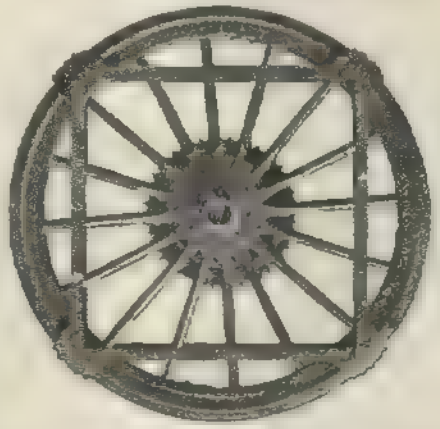
PRIMING DEVICE AND ANTI-SKID

The Reagan Grate Bar Company, of 209 N Front St., Philadelphia, Pa., is putting on the market for the 1912 season, two new ac-

Reagan Ideal Priming Device

cessories in the form of the Ideal Priming Device, and the Reagan Non Skid.

The priming device consists of a small pump to be fastened to the dash, taking gasoline from the feed pipe and forcing it



The New Reagan Non-Skid for Solid Tires.

through a distributor to the motor cylinders through a tee inserted between cylinder and priming cup.

The best method of operating this device is to prime the motor immediately after stopping by raising and pushing down the pump handle once, forcing a small amount of gasoline into each cylinder.

The device sells for $26 for a 4-cylinder motor, and $32 for a 6-cylinder motor.

The non-skid device is especially designed for solid tires and is quite simple, as may be seen from the illustration. It consists of a corrugated crucible steel friction surface, with side arms which are fastened to the felloe by means of a plate and bolt. In the illustration, side bars are used to hold the plates rigid. These bars are not absolutely necessary, however, as each cross member is fastened individually to the wheel. The side bar is used to give additional rigidity and prevent movement along the tire

TINGLEY BLOWOUT PATCH

Charles O. Tingley, of Rahway, N. J., is placing on the market for 1912 a new blowout patch which we illustrate. The flap s

C. O. T. Blowout Patch

cut on the bias so that the rim will not cut it. Each patch is made the correct size to fit the tire called for by the purchaser. The sizes and prices are from 3-in. (75c.) to 5-in. ($1 50) sizes, varying by half inches.

Mosler
SpitFire
BREECH BLOCK TYPE
FORD AND BUICK
OWNERS TAKE NOTICE
!!!
THE PLUG WITH THE HANDLE
IS THE BEST PLUG FOR YOUR CARS
BECAUSE IT MAKES PRIMING EASY
EASY TO TAKE OUT
EASY TO CLEAN
EASY TO PUT BACK
WRITE FOR INTERESTING BOOKLET
A. R. MOSLER & CO.
163 WEST 29TH STREET
NEW YORK

A NEW AXLE

The Wayne Auto Axle Company, of Fort Wayne, Ind., is placing upon the market a new rear axle with a novel differential construction. The object of the company was to produce a design which would transmit the engine power to the two wheels in direct proportion to their traction, instead of inversely, as in the ordinary differential.

This eliminates skidding, it is claimed, and enables a car to get out of mud holes with ease.

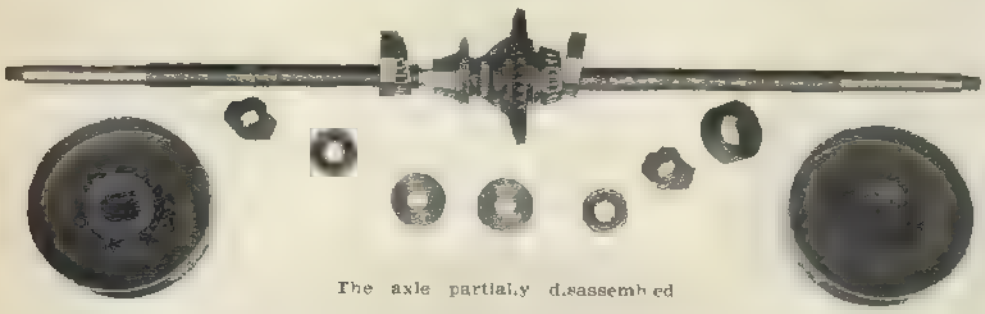
With the ordinary differential the driver is depending entirely for the propulsion of his car, upon a differential gear which confines the tractive effort to the wheel which rotates the faster, to put it plainer; the outside wheel when turning a corner. In other words the wheel which has the least adhesion or grip on the road must propel the car, a fact not universally known in the automobile world, but universally felt through the medium of serious accidents and aggravating inconveniences, probably caused by skidding but ultimately attributed to the prime fact of propelling the car by the faster rotating wheel

The axles run on bearings amply strong to carry any radial load as well as thrust, which may be put upon them. Adjustment is also allowed for in these bearings. The whole is housed in a pressed steel case. The complete driving member is shown in the second illustration partially dissembled to show the parts in detail. In this construction a wheel can be removed in a few moments, independent of the axle proper.

Fastened to this axle is a cam, which fits inside of the clutch. It is so constructed that when the axle is caused to revolve the curved surface on the cam spreads the two halves of the clutch into the ring, made integral with the hub of the wheel, with such power as to revolve the wheel with it.

The car is in this manner propelled forward or backward with no more operations than is at present in vogue. The action is entirely automatic and "fool proof;" no small delicate parts to get out of order.

The performance of the mechanism is explained thus: The clutch is spread by the revolving cam and grips the ring which is fastened rigidly to the wheel and in revolving carries the wheel with it. The car is now in motion and traveling in a straight



The axle partially disassembled

When the slower rotating wheel does the propelling, the car is of course driven by the inner wheel, or the wheel that describes the shorter arc, when turning a corner.

The device which accomplished this principle is shown in the accompanying cuts. The first illustration shows the assembled axles—no differential gears are used, the driving pinion integral with the shaft is housed in such a manner that it may be adjusted to mesh with the ring gear without changing the adjustment of the bearings, which are arranged to allow the removal of any lost motion. The ring gear is riveted to the center socket which is provided with a square hole to receive the squared ends of the axle proper, this socket giving sufficient end adjustment so that the ring gear can be set to mesh perfectly in the driving pinion at all times.

The squared ends of the axle come together in the center of the socket and thus transmit the side thrust from wheel bearing to the other without putting the slightest strain on the center bevel gear housing.

line. Both clutches, one in each rear wheel, are gripping, the moment the direction of the car is deflected either way, as in turning a corner. The wheel which revolves faster carries the clutch with it and in doing so the lips or guides of the cam acting on a roller return the two halves of the clutches to a neutral position. The wheel is released and continues so as long as the wheel revolves faster than the axle shaft, thus producing a perfect differential, which transmits the power to the slower moving wheel

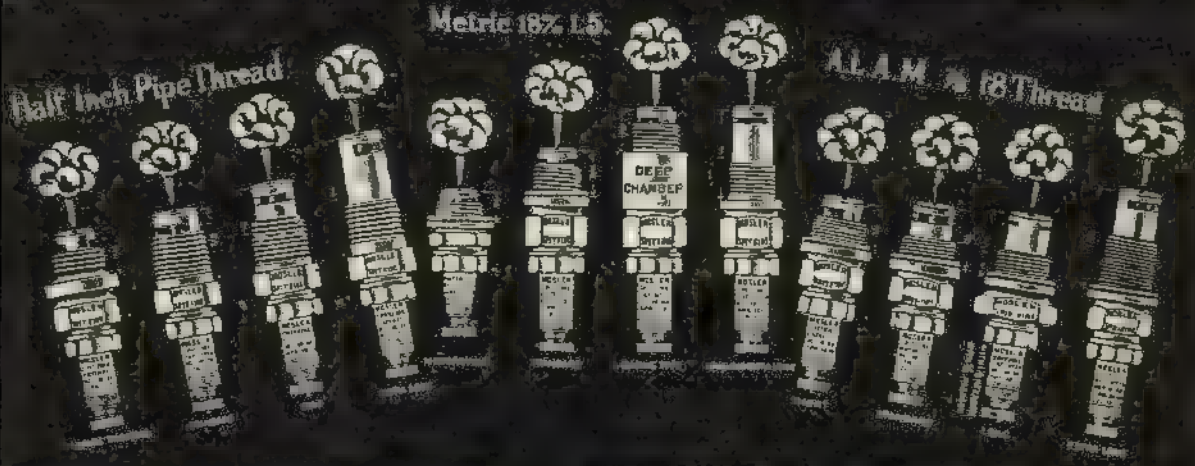
When the car is traveling through bad road conditions, it is impossible for either wheel to slip or spin to anywhere near the extent to which the present differential will allow them, since the slower moving wheel does the driving and any momentary attempt of one wheel to spin causes it to be instantly released and no power is transmitted to it.

The two wheels are so intimately connected and the action is so positive that both wheels must slip or spin at exactly

Mosler Spit Fire

THE PLUG
WITH THE DEEPEST CHAMBER

Leads the World



MAGNETO & MICA TYPES VESUVIUS & STANDARD TYPES

SHOOTS A FLAME HOT AS THE FIRES OF VESUVIUS
IGNITES THE CHARGE ENERGETICALLY AND UNFAILINGLY

Energetic Ignition **Greater Power**

Dealers and jobbers beware! We protect our trade mark
PACKED IN THIS BOX FOR YOUR PROTECTION

DON'T BUY IMITATIONS.

A. R. MOSLER & Co. 163 W 29TH ST. NEW YORK

Body Makers,--ATTENTION!

Right here is Something Real Interesting

GARDNER ARTIFICIAL LUMBER

A cheap and durable substitute for wood, laminated boards and sheet metal.

SMOOTH, HARD and STRONG,—made of fibres, chemically treated and subject to hydraulic pressure.

¶ Made in large sheets up to 48" wide by 144" long, in thickness ⅛" up. Will not split, buckle nor check,—takes a much better finish than natural wood or metal, can be bent to any curve desired and will retain its shape indefinitely.

¶ There is no grain, so it can be cut in any direction.

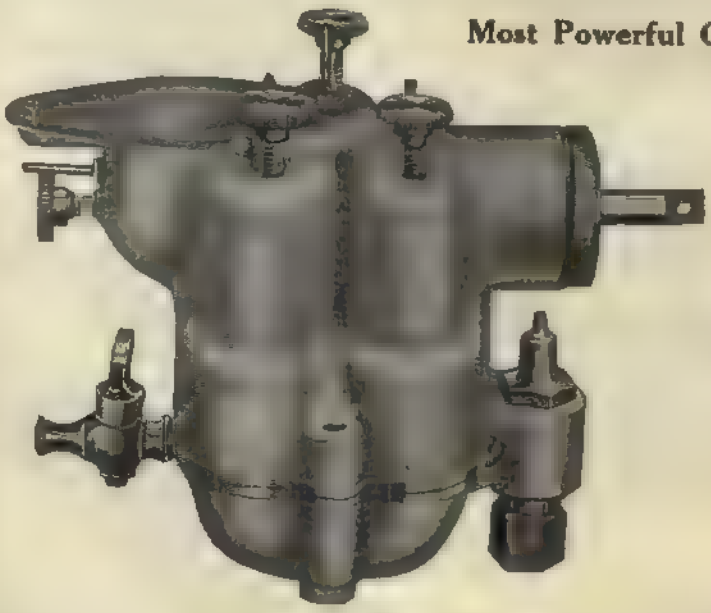
¶ Worthy? A trial is all we ask to prove this conclusively. It's quality is worthy your money.

¶ We will be pleased to supply samples and general directions for use upon application.

Gardner Artificial Lumber Co., - Barberton, Ohio

MULTIPLE JET CARBURETOR

Most Powerful Carburetor Made



This model is equal to a cluster of three carburetors:

One Set for Low Speed

One Set for Medium Speed

One Set for High Speed

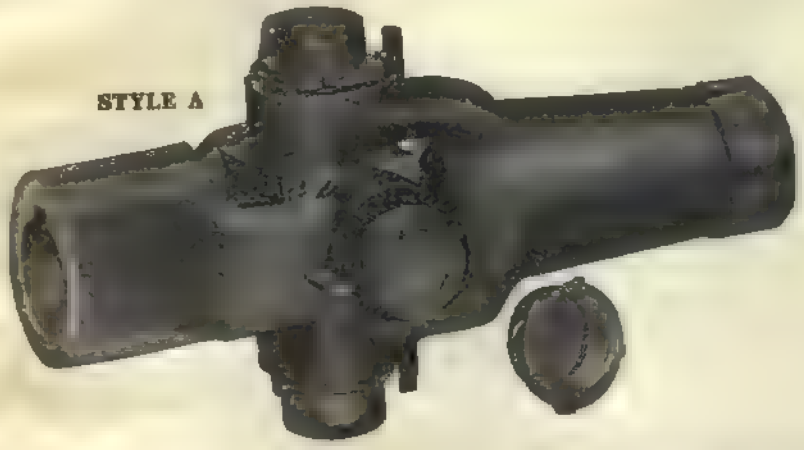
Write for Booklet.

Reasonable Prices. Liberal Discount to Agents.

MULTIPLE JET CARBURETOR COMPANY, DAYTON, OHIO

Blood Bros. Universal Joints

STYLE A



Improved grease cups that cannot lose off. Best method of lubricating.

Blood Bros. Machine Company

Manufacturers

KALAMAZOO, MICH.

Chas W House & Sons

UNIONVILLE, CONN.

WRITE FOR PRICES

FELT Washers

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Actua. Size, 13" x 18". Original in 15 Colors and Gold.

Actual Size, 13" x 30"

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AGENCY SIGN

ON
EVERY

DEALER'S WINDOW

DO IT BY THE

MEYERCORD

DECALCOMANIA TRANSFER PROCESS

OUR TRANSFER AGENCY SIGNS ARE BETTER THAN HAND PAINTED SIGNS

They are made in pure oil colors and gold and any dealer can transfer the sign right on his store door and windows

Scores of the leading companies have adopted Meyercord Decalcomania Transfer Signs as their standard agency signs.

Wherever you have an agent or dealer, there you should have a Meyercord Sign.

You get window space free of charge and give the dealer a sign, *better* than a hand painted, and which, if painted by hand, would cost from $5.00 to $25.00

Every manufacturer should investigate this wonderful process now. Write for samples and prices today.

THE MEYERCORD COMPANY, INC.

Pioneer American Manufacturers of Decalcomania Products

Main Offices: 11th Floor Chamber of Commerce Building, Chicago

Branch offices in all large cities

ANNOUNCEMENT

Packard

Oils

¶ The Packard Motor Car Co. of Detroit have transferred to us the sole right to make and sell SPECIAL PACKARD AUTOMOBILE LUBRICANTS.

¶ The oils, prices, trade marked packages, etc., will remain the same.

¶ These oils are not made by any other concern.

¶ Orders for them should be sent direct to us.

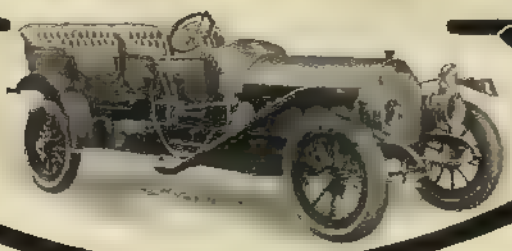
WOLVERINE OIL CO.

80 Broad Street, New York

T. E. Tomlinson, President

Founder and Former President of Haveline Oil Co.

PALMER-SINGER



Strongest Built Car in the World

1911 SERIES

Never before have so many commendable features been embodied in any one car, by comparison of specifications, quality and price, as the Palmer-Singer 1911 series contains

This series consists of four luxurious, high-class models, all correct in design and successful in practice. Mechanically, all PALMER-SINGER models are practically identical in principle, built of the same material and with equal care; they are commodious, comfortable and graceful, most attractively designed and finished, differing only in size and power.

The unusual, thoroughly strong, yet simple construction of the PALMER-SINGER explains why we are able to offer that strong guarantee of service which is a part of the sale of each one of our cars.

Our literature, which will be promptly mailed to you upon request, will explain fully, and an inspection thoroughly prove all our claims for PALMER SINGER 1911 series

Palmer & Singer Manufacturing Co.

(Licensed under Selden Patent)

Long Island City, New York

1620-22-24 Broadway, New York 1321 Michigan Ave., Chicago, Ill.
Ed. M. Fowler, 533 Van Ness Ave., San Francisco, Cal.

We invite correspondence with prospective representatives of high standing—those who can conduct our business along the highest class lines, and not only make but keep thoroughly satisfied owners.

It can't run out or congeal. It's where you want it *all the time*, in *exactly the proper quantity and consistency*.

It is a pure petroleum grease, and contains no adulterant. Heat or cold do not affect its consistency.

WE GUARANTEE

that one pound of KEYSTONE GREASE applied according to our directions will last longer and lubricate better than three to four pounds of any other lubricating grease or compound.

Write for Further Particulars

KEYSTONE LUBRICATING COMPANY

ESTABLISHED 1880

Executive Offices and Works, Philadelphia, Pa.

Lubrication is not sacrificed to non-carbonization in

PANHARD OIL

Panhard Oil is the only oil that, while possessing freedom from carbonization, still has a perfect lubricating body and lightness of color. It is unlike most light colored oils in that it has not been filtered so excessively as to remove both the carbonizing impurities and the lubricating body.

Panhard Oil is refined exclusively from the best Pennsylvania crude, and every drop is uniform in quality. There is absolutely no variation at any time.

The lubricating body in Panhard Oil is so stable that it will remain efficient even at extreme low and extreme high temperatures.

Panhard Oil is a common-sense oil made for the prime purpose of promoting the efficiency and long life of your car.

YOU will be interested in our new booklet, "Motor Lubrication," which contains valuable information for every motorist. Write for it to-day. Address all communications to

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We prepay freight and allow 30 days trial on send us name for your [illegible] or returning with no charge for AUTOIL used if it doesn't suit you

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BULLARD

Once tried, never denied!

Ask Us for SPECIAL PRICES on BULLARD WRENCHES TOOLS and TOOL BITS, PLIERS and

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WE HAVE CAPACITY FOR

HEAVY STAMPINGS

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GAS ENGINE LUBRICANT

MANUFACTURED ONLY BY

W. K. KELLOGG'S OIL

IS THE BEST FOR AUTOMOBILES AND MOTOR BOATS

Absolutely New, Sensible, Convenient

The Skelto Frames, No. 420

Roll edge non-rust rims, photo [illegible] wire riding goggles with [illegible] masses [illegible] bad weather shield [illegible] mask over the Skelto frame and have it

Waldorf-Skelto Goggle No. 410

Patented June 15, 1909

[illegible] based on the INSIDE of these goggles, [illegible] all respects. **On trial this month, 50 cents.**

THE TEXAS COMPANY

212-214 Kinzie St. (West), CHICAGO, ILL.

Phinney-Walker

Keyless Auto Clocks

To wind, turn rim once a week

Latest Style, Model S, Polished Cast Brass Case, 2½ inch dial

Send for Catalogue.

Model S, $12.00, Phinney-Walker Movement
Model A, $25.00, Seth Thomas Movement

Phinney-Walker Keyless Clock Co.

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Every road rides like the best road when Westen Shock Absorbers are used. Three sizes — three prices.

298 HALSEY STREET

WESTEN NEWARK N. J.

AUTOMOBILE TOPS

Our tops will be standard equipment for many cars next season, because their popularity is so great that manufacturers and dealers simply have to comply with the demands of their customers.

Fine fabrics and designs to fit all body schemes.
Write for detailed information.

SPRINGFIELD AUTO TOP & UPHOLSTERING CO., SPRINGFIELD, MASS.
102-106 Dwight St.
(Address name in full when writing)

METZ 1911 RUNABOUT

Every car fully equipped exactly as shown, $485.

EQUIPMENT — Bosch Magneto, Top and Slip Cover, Lamps and Generator, Tools, Horn, Speedometer, Clincher Tires, Extra Rim, Foot Rest, Robert Gas Tank, Gasoline Gauge, Tire Carrier, Luggage Carrier.

Catalog sent on request. Immediate delivery.

METZ COMPANY, Waltham, Mass.

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ALWAYS INSPIRES CONFIDENCE

BECAUSE

Its Superior Qualities Have Been Proven by Years of Experience.

Its longer life makes it the cheapest cable on the market. "Ask any user."

THE PACKARD ELECTRIC CO.
360 Dana Ave. Warren, Ohio

C. O. T. Combination Gum Gum and Vulcanizing Fluid

For filling in cuts or lig-outs

A1 on heavy tires.

Price, $1.00 each

CHARLES O. TINGLEY
RAHWAY, N. J.

Automobile, Motor and Bicycle Supplies

WHAT THE TRADE WANT AND WHEN THEY WANT IT

S. W. Cor. Cherry and Juniper Streets

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PHILADELPHIA, PA.

Adopted by the leading pump manufacturers

PERFECT AIR COUPLING

Insist on a good reliable pump connection. That is Youse "Perfect" Made from solid brass. Best for pneumatic tire inflation and Air Tight. Vacation Pump Manufacturers desires and ours. We have an interesting proposition on these couplings in quantities. Write us at once.

Our Perfect Jr. Coupling is smaller and cheaper. Retail price, 15 cents each.

YOUSE & DADDOW :: Reading, Penna.

BURMAN BREAKS MILE RECORD

The Brighton Beach races on July 3-4, with the Moross racers the principal contestants, furnished considerable excitement to a large and enthusiastic crowd. The feature of the races on the Fourth was the mile time trials by Burman in the Blitzen Benz. He broke De Palma's record of :48 92, made at Syracuse, N. Y., last fall, covering the distance in :48.72, going De Palma 1-5 second better

Time trials, one mile for world's record—Won by Burman, Blitzen Benz. Time, 0 49.59 and 0 49.36. (Latter, record for Brighton track.)

July 4.

Five miles, non-stock, 231-300 cu. in. displacement—Won by Tyson, Correja; second, Anderson, Marion; third, Rost, Crow. Time, 5 33.21

Five miles, non-stock, 301-450 cu. in. displacement, 1,800 lbs. minimum weight—Won by Patschke, Prince Henry Benz; second, Disbrow, Pope-Hartford; third, Knipper, National. Time, 4:43.37.

Ten miles, non-stock, 600 cu. in. displacement or less, with minimum weight of 2,100 lbs.—

Burman finishing after breaking the mile track record

Burman also captured the Remy Brassard by winning two of the three heats. Knipper, Benz, sprung a surprise by winning the first heat.

The meet saw honors well divided among the drivers, the Benz team, the Nationals, De Palma in the Simplex, Hughes in Mercer, Disbrow in Pope "Hummer," and Tower in E-M-F all coming in for the money

The summaries

July 3.

Five miles, non-stock, 161-230 cu. in. displacement—Won by Tower, E-M-F; second, Ferguson, Lancia; third, Craig, Paige. Time, 5 43.56

Five miles, non-stock, 231-300 cu. in. displacement—Won by Hughes, Mercer; second, Foster, Correja; third, Juhasz, S. P. O. Time, 4 55 51.

Five miles, non-stock, 301-450 cu. in. displacement—Won by Patschke, Prince Henry Benz; second, Sheets, National; third, Cobe, Jackson. Time, 4:42 47

Five miles, non-stock, 600 cu. in. displacement, with a minimum weight of 2,100 lbs Won by De Palma, Simplex; second, Zengle National; third, Sheets, National. Time, 4 45.3

Five mile novelty race, fully equipped touring car (each taking on and depositing passengers) —Won by Lane, Hudson; second, Tyson, Colby Time, 8:11.56. (Only two starters.)

Three miles, free-for-all, best two in three heats, flying start for Remy Brassard -First heat won by Knipper, Benz; second, Burman, Benz; third, De Palma, Simplex. Time, 2:41 65

Sixty miles, non-stock, 600 cu. in. or less displacement, with a minimum weight of 2,100 lbs.—Won by De Palma, Simplex; second, Hughes, Mercer. Time, 59 21.37

Ten miles, free-for-all handicap—Won by Hughes, Mercer, second, Land, Simplex, third, Disbrow, Pope-Hartford. Time, 5:33 53.

Won by Herr, National, second, Sheets, National third, Disbrow, Pope-Hartford. Time, 9:16.80

Three miles, free-for-all, for Remy Grand Brassard and trophy—Second heat, won by Burman, Blitzen Benz; second, Knipper, Benz; third, Patschke, Jenatzy Mercedes; time, 2 37.38 Final heat, won by Burman, Blitzen Benz, second, Knipper, Benz; third, Patschke, Jenatzy Mercedes. Time, 2.56.08

Special event, five miles—Won by Tower, E-M-F; second, Craig, Paige. Time, 5:24 57

Free-for-all Australian pursuit race, non-stock —Won by Herr, National, distance, 23 miles Time, 23:14 97.

One mile time trial by Hummel, Jenatzy Mercedes. Time, 58.57 (No record.)

One mile time trial by Burman, Blitzen Benz Time, 51.07. Second trial, 48.72. World's record

Fifty miles, non-stock, of 600 cu. in. displacement or under, with a minimum weight of 2,100 lbs.—Won by Disbrow, Pope-Hartford; second, Cobe, Jackson, third, Rost, Crow. Time, 51 59 16.

Five miles, free-for-all handicap—Won by Tower, E-M-F (40 seconds); second, Disbrow Pope-Hartford (scratch). Time, 5:29 ~.

NAZARRO HAS QUIT THE RACING GAME

Felice Nazarro, greatest of automobile road race drivers since the retirement of Vincenzo Lancia, has gone into the manufacture of cars on his own account, and probably will be seen no more as the pilot of high-powered creations in the classic contests. Nazarro, like Lancia, was employed by the Fiat Company, of Turin. Lancia quit to build a high-class small car. His successor, it is understood, will also build a small car, giving it his own name.

GRAND PRIZE AND VANDERBILT RACES

Entry blanks have been issued for the International Grand Prize race of the A. C. A. for the $5,000 Gold Challenge Cup, to be held on the famous Chatham County course, near Savannah, Ga., November 30, 1911, and blanks have also been prepared for the seventh William K. Vanderbilt, Jr., Cup race, to take place under the same auspices on the same course four days earlier. Entries for both events will close November 15.

Conditions for the Grand Prize race are practically the same as last year, American and foreign cars being eligible to compete, and foreign entries being made through the recognized automobile club in the country in which the car is manufactured. American entries must be made with William B. Stillwell, of the Savannah Automobile Club. The event is a free-for-all, the only restrictions being that the over-all width of the car must not exceed 6 ft. 2 in. There is no piston displacement limitation. In length the course is approximately 17 miles, and is to be covered twenty-four times, making the distance of the race slightly more than 408 miles. Entry fees are as follows: One car, $1,000; two cars, $1,500; three cars, $1,750, provided all are of the same manufacture. Not more than three cars of one make will be permitted to enter.

This is the first time that the famous Vanderbilt race will have been held elsewhere than on the Long Island course. The race will cover the 17-mile circuit seventeen times, totaling about 289 miles. It is open to cars under A. A. A. Class C, divisions 4-C and 5-C, 301-450 cu. in. piston displacement and 451-600 cu. in. respectively. The entry fee for each car is $500. To the car covering the required distance in the shortest elapsed time there will be awarded the William K Vanderbilt, Jr., Cup. This award carries an additional cash prize of $2,000 to the driver. There will also be awarded a special Donor's trophy for permanent ownership, as in former years. Entry fees for this event are for one car, $500; two cars, $750; three cars, $1,000, provided all are of the same manufacture, not more than three of a single make being permitted in either class

As is well known, the Grand Prize event, being an international one, is sanctioned by the Automobile Club of America, which controls international racing, whereas the Vanderbilt Cup race, which is a National classic, is sanctioned, as formerly, by the A. A. A., which controls racing in this country.

U. S. TIRE DATA SHEETS

The U. S. Tire Company, of New York City, has gotten out a series of data sheets which fit the S. A. E. hand book, covering the sizes and detailed dimensions of the Hartford and Morgan & Wright solid motor tires.

ELGIN NATIONAL STOCK CHASSIS ROAD RACES

The increasing interest in the Elgin National Stock Chassis Road Races, to be conducted by the Chicago Motor Club in conjunction with the Elgin Road Racing Association, over the fast course at Elgin, on August 25th and 26th, is further evidenced by the additional entries which have been received by the Chicago Motor Club during the past week.

The oiling of the course and the preparation and widening of the roadway is progressing and nearing completion, and the "open season" for practice will begin in the near future.

The four events will be timed by the Warner automatic electrical timing device and the technical supervision will be entirely in the hands of the technical committee of the American Automobile Association.

Advices have been received to the effect that the Elgin Watch Company is now considering awarding to the successful competitor in the event for the Elgin Trophy a really handsome gold medal of the value of $500, which contains a replica of the Elgin Trophy itself.

When this additional prize is offered the Elgin Watch Company will probably bestow a similar medal upon Ralph Mulford, the winner of the Elgin Trophy in 1910, who has already entered for the Elgin events again this year, driving the same car. Three Alcos are also entered in this event, with two Nationals. Harry Hartman and Frank Lee will drive two of the Alcos, while the third will be handled by the man whose name is so well coupled with Alco cars as to need no mention—Harry Grant. The drivers of the Nationals are not yet named.

A Corbin, to be driven by Maisonville, has been entered for the Kane County Trophy, 231 to 300 cu. in., increasing the entries in this one event to nine cars, two more than were actually received in 1910.

With the $3,500 Elgin Trophy, the $1,000 cash prize and the $500 gold medal, assurances have been received that one of the leading manufacturers of rims will offer an additional $500 cash as a bonus to be distributed among the drivers finishing first, second and third in the Elgin National Accessory manufacturers and the makers of tires are yet to be heard from, but undoubtedly the award for this event to the successful driver and car will be more than gratifying.

DEATH OF HENRY U. PALMER

It was with regret that the many friends of Henry U. Palmer, vice president and treasurer of the Palmer & Singer Manufacturing Company, learned of his death. He passed away June 20th.

Rambler

Motor Cars

If you drive a Rambler the pleasure of your outing is not converted into drudgery by tire trouble. The Rambler is the only American car equipped with the Spare Wheel. Fitted with a perfect inflated tire, it may be quickly and easily changed for a wheel with a damaged tire. No tiresome pumping in the hot sun or cold rain and you avoid the dirt so disagreeable to the well groomed. This eliminates worry about tire trouble which so often mars a trip. Every feature of the Rambler is designed for the owner's comfort, safety and convenience. The Offset Crank Shaft enables you to throttle down on high gear no faster than a man usually walks; to glide along quietly in crowded traffic without frequent gear shifting and obviates the necessity of rushing the hard pulls through sand and up grades. The Straight Line Drive saves power; big wheels and tires give added comfort and tire economy; the brakes are large enough to provide a feeling of security and the safety starting device protects you from injury while cranking.

A telephone message to the nearest Rambler representative will bring a Rambler to your door for inspection. A postal will bring you the new catalog.

The Thomas B Jeffery Company

Main Office and Factory, Kenosha, Wisconsin

Branches: Boston, Chicago, Milwaukee, Cleveland, San Francisco, New York

Study It Closely

BENEATH the pleasing lines and clean surface of the Dietz VICTOR Headlight you will find a solid foundation of mechanical excellence.

A short-focus, lead-glass lens mirror, replaceable with a screwdriver if damaged; a double ventilator arranged to prevent flickering; substantial cast hinge and sockets—these are only a few of the attractive selling features of this most up-to-date headlight.

Show it to the critical motorist; showing is selling.

CHAS. E. MILLER,
New York City and Branches
MOTOR CAR EQUIPMENT CO.
New York City
MUTUAL AUTO ACCESSORIES CO.
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AUTO SUPPLY CO., New York City
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The "Scott" is *The* Demountable

"An Ounce of Investigation is Worth Pounds of 'Wish You Had'"

With this rim, the usual Clamps, Plates, Clamp Nuts, Gears, Wedges, Webs and Bolts are eliminated a cam "does the trick."

A quarter turn and the rim is removed—reverse and it's in place.

Conditions never affect its efficiency.

Use Proves It the

"Best Thing on Wheels"

It can be changed anywhere, at any time, by anyone in three minutes.

Takes any tire.

Priced at $55.00 per set of six—wheel work not included.

Explanation Without Obligation

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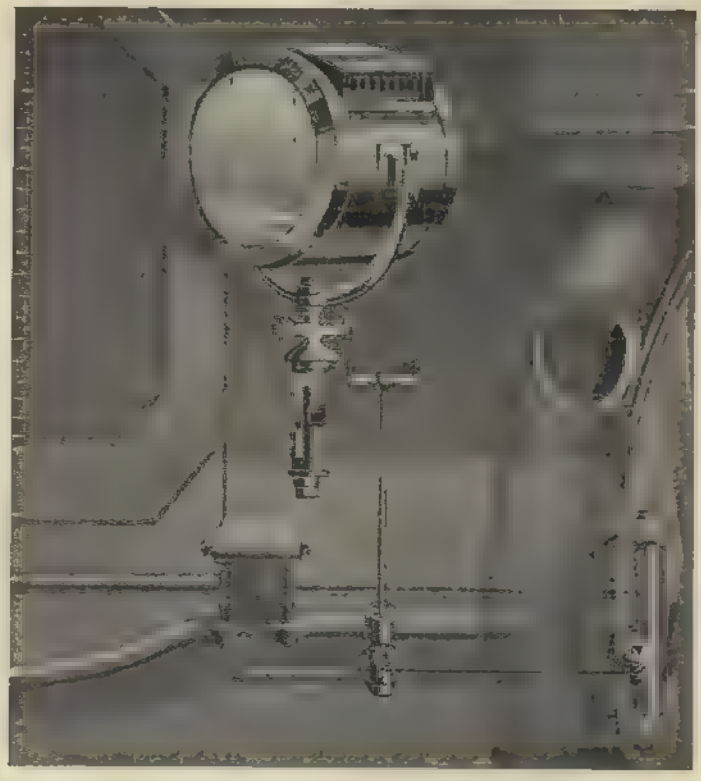
The "AUTOMATIC" STEERING GEAR for AUTOMOBILE HEADLIGHTS

Is *not only* an Automobile Accessory, but an **Automobile Necessity!**

Projects the Light Along the Road in Advance of the Wheels

Guaranteed for One Year



Automatic
Silent
Inconspicuous

Beautifully Finished in Polished Brass or Oxidized

Will Outwear Your Car

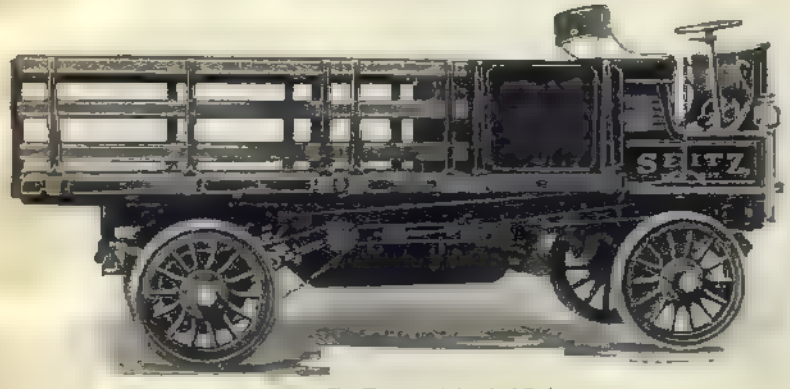
Furnished Complete and ready to attach to any make of car, to operate one or both lamps, at **$15.00 and $25.00**

Write for Descriptive Circular and Ocular Proof. It Will Interest You
Dealers:—Our proposition to you is a most liberal one. Write for particulars

Scranton Automobile Equipment Co.

1438 SOUTH PENN SQUARE, PHILADELPHIA, PA.

The SEITZ Truck



Seitz Three-Ton Truck, with Standard Body

—meets every commercial need

Has Double Friction Transmission

¶ Don't forget that word "double," and do not judge the Seitz Double Friction Transmission until you know what it is. Get our catalog it makes the difference plain to you

¶ But how does this transmission concern you, as a prospective buyer of a motor truck? By giving you maximum power on your driving wheels—you want a truck to handle its load easily, get under way quickly without fussing with a lot of levers and pedals

¶ With no other transmission, but none, can so large a percentage of the motor power be transmitted to the driving wheels and be controlled so easily and quickly

¶ The control on a Seitz truck is instantaneous: and it is all done with one lever A Seitz truck can be driven forward or back an inch or a mile, with absolute instantaneous control.

¶ The Seitz is also the only truck that will go anywhere—climb a 40% grade with a full load or pull through sand hub-deep.

¶ No clutch or gears on the Seitz truck.

¶ Do you want a truck that you can be sure will do anything you may ever want it to do? The Seitz is it For durability, strength simplicity and economy, it has no equal.

Not one or two, but all needs:

¶ **The Seitz truck is a powerful truck;** the motor is of ample capacity; compare the bore and stroke of this motor, the wheel base, size of wheels and tires, with any other truck of the same rated carrying capacity and note the difference—not in price, perhaps, but in the truck. The power is transmitted in a way that is different, but gets where it produces motion with least loss.

¶ **It is a speedy truck;** it gets under way quicker and always travels at most economical speed; but its rate of speed is no higher than a good truck ought to go.

¶ **It is a simple truck;** there is only one lever on the Seitz truck, but it does it all; forward, stop, reverse and emergency brake. No limit to number of speeds, and every speed obtained without taking hands off steering wheel—it's automatic.

¶ **The Seitz truck is an economical truck;** it goes farther and on less gasolene and lubricating oil than other trucks; on this point we want to send you some data, if you will ask us.

¶ You can't afford not to know about Seitz trucks, when our catalog tells all. Just say, "send your catalog."

To Dealers—Here is a line of trucks that is making good—a line that is a money-maker for you if you have a good financial standing, ability and push. If you want the Seitz Agency for your city, better write for our new catalog and dealer's proposition now.

SEITZ AUTOMOBILE AND TRANSMISSION COMPANY

243 Beecher Ave., Detroit, Michigan

All the world loves a winner

The many notable victories won by the

Splitdorf Magneto

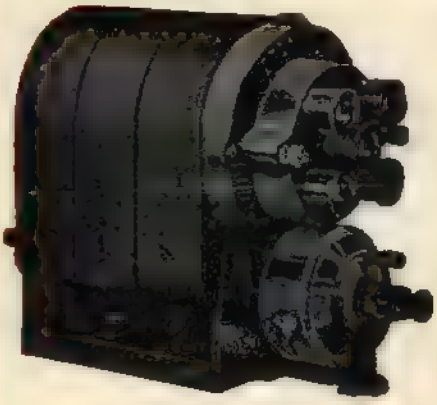
during the past year only serve to further emphasize its great popularity as an Ignition Device.

Facts are stubborn things, and it **IS** a fact that many of the

Greatest events of the year

were won by SPLITDORF equipped cars

In the recent World's Record Non-Stop Run of the Flanders—10,872 miles — it is found by careful computation that the SPLITDORF Magneto furnished 47,997,320 separate sparks to the motor, and during the entire 29 days there was not the slightest hint of Ignition trouble.



On merit, and merit only, you should equip your car with a SPLITDORF and have the same incomparable Ignition.

Please write for Magneto catalog

C. F. SPLITDORF

CHICAGO: 319 Michigan Ave.
SAN FRANCISCO: 520 Van Ness Ave.
DETROIT: 868 Woodward Ave.
BOSTON: Motor Mart
LOS ANGELES: 1226 S. Olive St.

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The Autocar

Established 1895

The Leading British Motor-Car Paper

Established in advance of all others and still far ahead of them all

Profusely Illustrated

¶ "The Autocar" provides, week by week, an interesting and authoritative review of the progress of automobilism in the United Kingdom, and should be read by every progressive maker and dealer who "knows how" to benefit by the experience of others.

Subscription Rates

	United States and Foreign Countries	Canada
Twelve Months - - -	22 8	17 6
Six " - - -	11 4	8 9

P. O. Order to be made payable to "The Autocar"

¶ American manufacturers of motor vehicles and accessories who wish to expand their business should look to the British Isles. The market is a rich one, and by advertising in "The Autocar" it is possible to reach the entire BUYING section of the public which is interested in automobilism.

May we quote you our advertising rates?

ILIFFE & SONS, Ltd., 20 Tudor Street London, E. C., Eng.

The Autocar

Established 1895

The Leading British Motor-Car Paper

Established in advance of all others and still far ahead of them all

Profusely Illustrated

¶ "The Autocar" provides, week by week, an interesting and authoritative review of the progress of automobilism in the United Kingdom, and should be read by every progressive maker and dealer who "knows how" to benefit by the experience of others.

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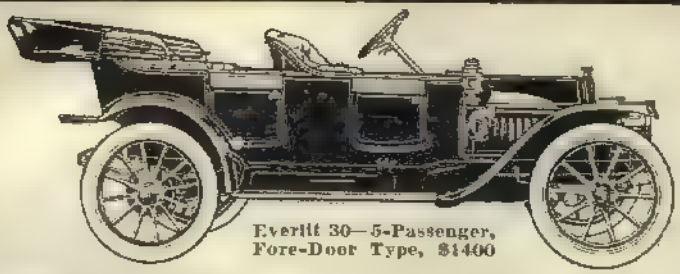


Everitt 30—5-Passenger, Fore-Door Type, $1400

The "EVERITT 30"—Built Throughout In One Factory—Is A Car You Can Stand Back Of, For It Will Stand Back Of You

Few people realize the manufacturing facilities behind the "Everitt," and the high quality of the details that go into it.

In this last year, a million dollars was spent in mechanical equipment for the Metzger factory This company is in business to *stay*. Its purpose is to manufacture cars *complete*—not "assemble."

Consequently, there has been installed here one of the most intricate equipments of automatic machinery to be found in the country. Every detailed operation is by Jig and Fixture, ensuring absolute accuracy and interchangeability.

If you should go through our factory you would be astonished at its mechanical features You would see that, manufacturing a complete car as we do, we "follow through" every detailed operation, checking and re-checking each, until we know that every part is *right*

Every gear in the "Everitt" is cut and heat-treated in our own shop. The rough stock is equal to that in any $4,000 car. It is impossible to buy *at any price*, ready-made gears of the quality we use.

In the planning of this car were used the ideas of a hundred big dealers; men who, like you, actually meet buyers and know what people want

Their experience was concentrated into the "Everitt" by William Kelly, the Master-Designer and Creator of fifty thousand successful automobiles

The result was a unique and simplified car with such advance features as a Block-Type Long-Stroke Motor, Double Drop Frame, Low Center of Gravity, Light Weight, Big Tire Allowance, Honey-Comb Radiator, Large Wheels and Nickel-Steel Gears, and a score of other details suggested by long selling experience.

THE "EVERITT 30"

We now have in full operation, for instance, our own great gangs of Multiple Drills, our own giant Shapers and Planers Gleason Gear Cutters, Brown & Sharpe "Automatics," Ingersoll Multiple Millers, immense Borers and Grinders, and scores of specially designed machines.

We have our own Steel Department, in charge of a famous English Expert, with huge Bake Ovens for Heat-Treating Steels, our own Electric Welders, and our own Body Plant.

We have one of the most complete "Auxiliary Equipments" in existence, with 782 glass-hard Jigs and Fixtures, set to exactly reproduce every machined part.

Over all this mechanical equipment is a superintendent of rare genius and experience, with picked foremen and mechanics who have built good cars for years.

And every one of the three manufacturers behind the "Everitt" is himself a *practical mechanic*, capable of running any machine in the shop.

Their experience dates back to the first automobile built in Detroit

Every little detail of this car has been most carefully worked out. The Body is hung low, on Strong, Easy Springs; the Upholstering is Deep, and of first quality Hand-Buffed Leather; the Seats and Doors are Wide and Comfortable.

There are seven body-styles, built on the one chassis. The Torpedo Cars cost $1400; the Open types, $1350 We can now make immediate deliveries

A few more "Everitt" Dealers are wanted,—real representatives who can make buyers understand how good this car is. We want dealers who appreciate a car built right throughout, and who will push it

To such we offer an attractive agency proposition, an absolutely square deal, a liberal factory policy and a car that has made good.

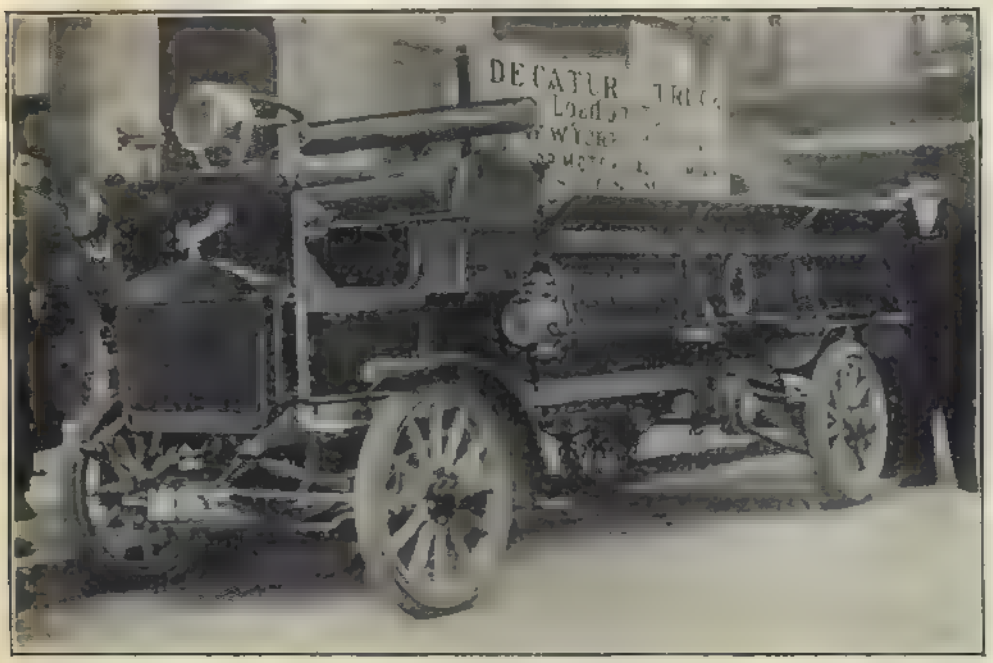
Write our Sales Department today.

METZGER MOTOR CAR CO., The Everitt 30 and Hewitt Trucks **DETROIT, MICH.**

Decatur One-Ton Truck Price, $2,000.00

The Hoosier Limited

New York to Boston on Thirty-Two Gallons of Gasoline, Three Quarts of Oil, with a Ton Load in 19 Hours and Forty Minutes Actual Running Time. Distance, Two Hundred and Sixty-Five Miles.



Decatur Ton Truck after its arrival in Boston

This truck carried a load of one ton the entire distance from New York to Boston, leaving New York at noon January 14th going via White Plains reaching end of first 50 miles and arriving at Bridgeport at eight o'clock that evening. Distance covered second day 214 miles, actual running time 6 hours. This was over very bad roads the snow lying very deep in places.

Monday, January 16th. Left Bridgeport 9.35 A. M. arriving at New Haven 11.10 A. M. Left New Haven 2.45 P. M. and arrived at Hartford 6.55 P. M. distance covered 74 miles, time on road between stops 5 hours 45 minutes. This trip was over frozen roads with very deep ruts and most of the way very hard running.

Tuesday, January 17th. Left Hartford 8.05 A. M. arriving in Springfield 12.10 P. M. Left Springfield 1.33 P. M. arriving in Worcester 6.05 P. M. Distance covered was 85 miles, time consumed on road 5 hours. Roads very good.

Wednesday, January 18th. Left Worcester 10.30 A. M., stopped one hour at South Framingham and 40 minutes at Natick, arriving in Boston 3 P. M. Time on road 3 hours 50 minutes, mileage, 44 miles. Total distance covered including some side trips making demonstrations etc. was 265 miles. This is according to the reading of the speedometer. The total running time was 19 hours 40 minutes making an average of entire trip 13 and 86-100 miles per hour. Gasoline consumed on trip was 32 gallons or a little better than 8 miles per gallon. The amount of oil consumed was 3 quarts.

One thing we want to call your attention to is this. It is the first time in the history of trucks that the trip from New York was ever made with a full load or in fact of any size. Furthermore we advertised that we were going to attempt to make the trip and from New York, showing the condition of the roads. This run was made by the Taylor Motor Sales Company of Boston, Mass., who are the New England Distributors of the Decatur Trucks.

Live Agents of responsibility wanted to write for open territory.

Decatur Motor Car Company

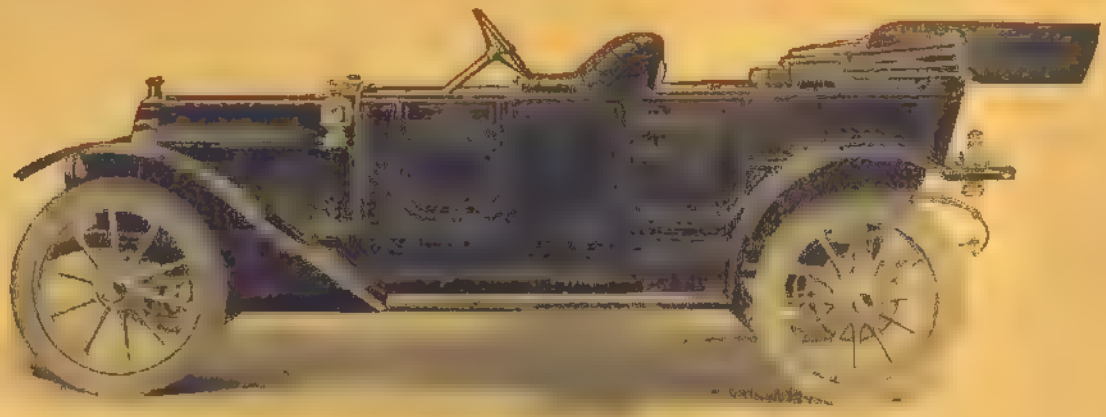
DECATUR, INDIANA

TAYLOR MOTOR SALES COMPANY, Boston, Mass
New England Distributers

SPECIFICATIONS, MODEL H

Motor—Rutenber, 4 x 4, 30 H. P.
Ignition—Simms high tension magneto.
Cooling—Water, by gear driven pump.
Lubrication—Self contained in motor.
Gear Change—3 speeds forward and reverse.
Wheel Base—129 inches.
Front Springs—2 inches wide, 38 inches long, semi-elliptic.
Frame—4 inch channel cold rolled steel, trussed.
Rear Springs—2-inch platform, 46 inches long.
Tires—32 x 3 front, 32 x 3½ rear, Goodyear hard rubber base, or Pneumatic Tires, 32 x 4, Dual in rear; 32 x 4½, front; $ 00 extra.
Wheels—32-inch, 12 spoke.
Axles—Front, 2 x 2½; rear, 2 dead square.
Weight—3400 lbs.
Clutch—Famous Hele-Shaw multiple disc running in oil.
Transmission—Warner "gears Vanadium heat treated."
Drive—Double chains to rear wheels, from jack shaft.
Brakes—Two sets internal, one square inch braking surface to every 14 lbs.
Control—Fixed ignition foot throttle.
Carburetor—Schebler automatic.
Capacity—2500 lbs.
Body Space—5 feet wide, 10 feet 6 inches back of driver's seat.
Tank Capacity—25 gallons.
Speed—30 miles.
Equipment—Full set of tools, two side lamps, tail lamp and horn.
Price—Chassis, $1800, with standard express or open stake body, $2000.

THE LEXINGTON



MODEL F, 40 H. P. TOURING CAR—$2000.00

EQUIPMENT Detachable fore doors, top boot, Prest-O-Lite, horn elegant oil and gas lamps, pump, jack, tools and 36 x 4 tires.

THE CAR THAT IS MATHEMATICALLY CORRECT and that is characterized by its elegance, comfort and service. Write us today for detailed information on LEXINGTON cars.

THEIR SPECIFICATIONS ARE MOST CONVINCING and may prove highly valuable to YOU.

THE LEXINGTON MOTOR CAR CO., No. 3 Factory Place, Connersville, Ind.

The Norwalk Gentleman's Roadster

A Beautiful, Powerful, Speedy Road Car For Two

A car that both in looks and operation commands respect and admiration everywhere is the Norwalk. A full realization of th's fact makes Norwalk owners proud owners; everyone of them.

If you are looking for mechanical quality and a certain self satisfaction in the car you are going to drive, the Norwalk will fill the bill, as well as giving you unsurpassed assurance of the maximum in service—both quality and quantity.

Get our catalogue It will give you an insight into real automobile value

THE NORWALK MOTOR CAR CO., Monroe St., Norwalk, Ohio, U. S. A.

United States Dealers from Coast to Coast Unanimously Report that

"Business is Booming"

Here is the reason for it. Today there is a persistent, concerted demand on the part of motorists everywhere for United States Tires—a demand such as has never before been known in the history of tire making—a demand created by a country-covering advertising campaign and backed up by the

Strongest Tires in the World

In spite of the fact that we enlarged our tire making capacity over 25 per cent. before the beginning of this season—

In spite of the fact that our five immense factories for months past have been running twenty-four hours a day working three eight hour shifts—

Notwithstanding these provisions, the constantly increasing demand for United States Tires is taxing even our unrivaled tire making equipment to handle it.

We are now making big additions to our facilities that will amply provide for the even greater increase in business that is sure to come.

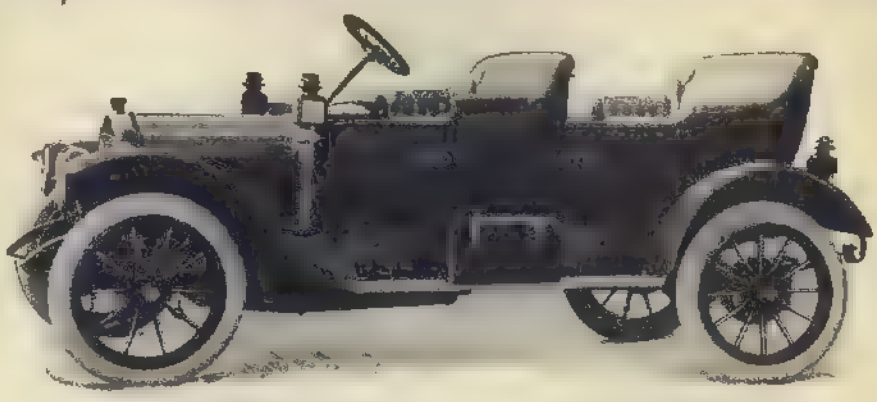
Large as this business is to-day it is but a promise of what the future has in store for United States dealers. They are handling unquestionably the easiest selling tire and the best advertised tires in the world.

United States Tires

Continental **Hartford**
G & J **Morgan & Wright**

America's Predominant Tires

United States Tire Company
Broadway at 58th Street
New York



The Endorsement of Buyers

PROBABLY no gasoline car on any market was ever accorded such prompt and unqualified endorsement by motorists as the White gasoline car, now closing its second wonderfully successful year. No car presenting its claim as the White, when the gasoline motor market was flooded with every kind and description of car, could have secured a foothold, which did not possess innately splendid merit. It is, therefore, the most flattering tribute to the economical WHITE that there comes but one report from every owner—a report telling of the surprisingly low cost for fuel, for oil, for tires and the almost negligible item of repairs. These endorsements do not come from any one state or territory, but from Maine to Texas North South—East—West—under all conditions of roads and grades.

White Quality Its Cause

These results could not be secured with such persistent regularity if the design of the engine did not represent the very best engineering thought of the times—if its simplicity were not such as to appeal to every owner and driver—if the car were not superbly built, utilizing every improvement modern science has brought to the service of motor car building. It gets its economy of fuel from the long-stroke engine—it gets its economy of tires from its moderate size and weight it gets its economy of repairs from the fact that it was well built in the beginning, of the best materials obtainable. Added to all these features, it has a compression release which makes cranking easy and perfectly safe—it has four forward speeds which makes driving easy, preserves the life of the engine and helps to economize in the use of fuel.

Let us send you our latest catalogue, testimonials of users in your territory—people you probably know and whose opinions you must respect.

The White Company

860 EAST SEVENTY-NINTH STREET, CLEVELAND

Chapters on Quality

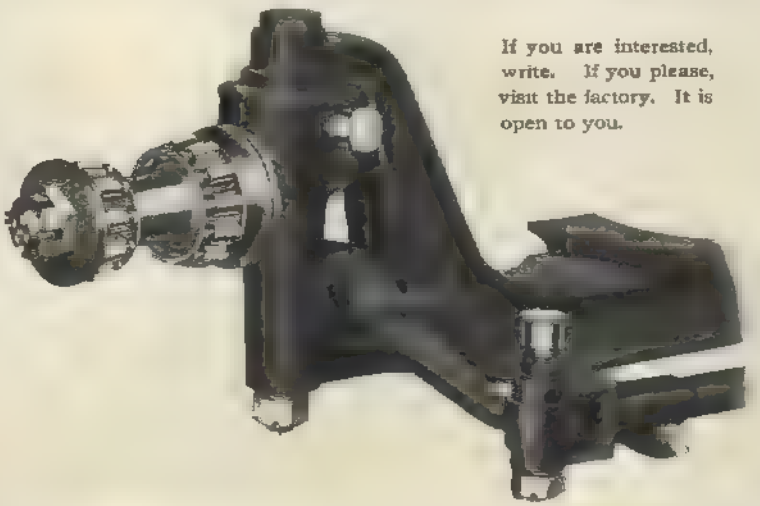
CHAPTER SIXTH

THIS steering knuckle, extending from the end of the front axle, guides the wheels, carries the car weight, and is subjected to innumerable driving and road strains. It is one of the vital points in motor car design and construction. On its quality depends your safety. It pays to know the reputation of the manufacturer on whose steering knuckles you rely.

Timken-Detroit Steering Knuckles are correct in design and are properly proportioned. The material is carefully selected by exhaustive laboratory tests, is specially heat-treated and exact, scientific methods of manufacturing are employed. Behind their design, material, etc., are years of experience, backed by liberal capital and a fixed policy to produce the best.

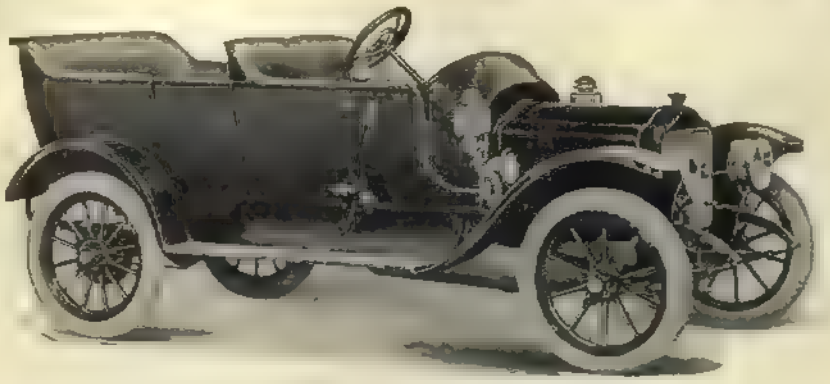
No manufacturer would knowingly use a poor steering knuckle, but anxiety to keep down cost might induce some to take a chance. The manufacturers using Timken-Detroit axles use them because they don't want to take any chance.

It's a big matter—worth investigation by user, dealer and manufacturer.



If you are interested, write. If you please, visit the factory. It is open to you.

The Timken-Detroit Axle Company
Detroit, U. S. A.



THE TEST OF A CAR

WHAT is the test of a car to-day—what does an owner need most unless he is a millionaire? Economy of operation—combined with reasonable size and reasonable speed. Judged by this touchstone, there is one car that suits every requirement—the White Gasoline Motor. It is a moderate size car—of moderate weight—moderate price, and above all, moderate in up-keep, having a four-cylinder, long-stroke engine, with power enough for every purpose. On this basis, and this basis only, White Gasoline Cars invite inspection and comparison.

With regard to materials and method of manufacture, an unbiased expert—one of the leading men of the country—has said that it is impossible to build a car better than the methods now in vogue at the White Company's factory.

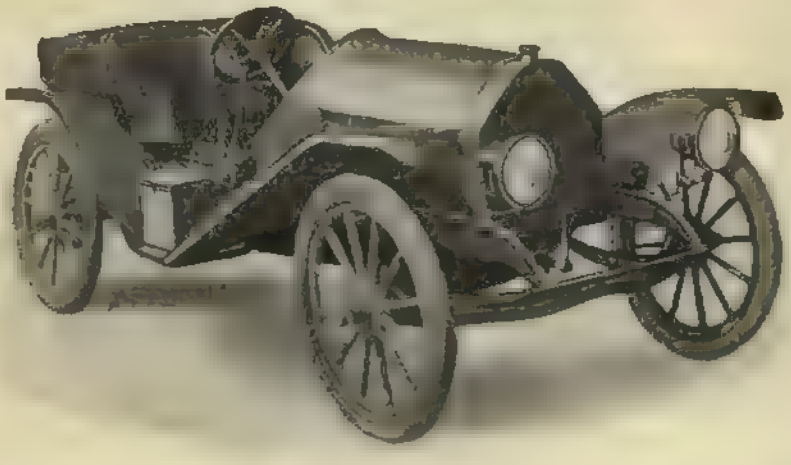
If you are interested in a car which combines this manufacturing excellence with a proper balancing of size and power, let us show you the car itself. *Many agencies now open for White Gasoline Cars and truck, also steam passenger cars. Demonstrators should be bought at once for early delivery.*

The White Company

860 EAST SEVENTY-NINTH STREET, CLEVELAND

VAN "22"

The Car for You



The "One Best Bet" In the Small Car Class .·.

$850

BEYOND QUESTION THE BEST DESIGNED AND BEST CONSTRUCTED ROADSTER IN AMERICA. BUILT UP TO A STANDARD—NOT DOWN TO A PRICE.

Four cylinder "valve-in-head" motor, 3¾" x 4", cast in pairs, 22.5 h. p. **Three** speed and reverse sliding-gear transmission, strong enough for a 35 h. p. car. Wheelbase 96 inches. Wheels 32 inches, 3 inch tires. Axles Sheldon, 35 h. p. set, with Empire ball bearings. No such axles on any other car of this size or price.

Our Catalog Gives Full Particulars

Equipment includes magneto and Electric Lights, with 6-80 storage battery.

GUARANTEED DELIVERIES

When you buy a Van 22, you get more than "just an automobile." You get the last word of Style and Correct Construction, and also the most genuine reliability, and most definite money's worth anywhere.

Van Motor Car Co., Grand Haven, Mich.

DISTRIBUTORS

HULL & KEHEW, 289 Congress Street, Boston
VAN MOTOR SALES CO. 48th St. and Broadway, New York
HUGHES AUTOMOBILE CO., 1233 Michigan Ave., Chicago
WHITMAN AUTOMOBILE CO., St. Louis, Mo.
COLE MOTOR CO. OF IOWA, Des Moines, Iowa
INTERSTATE MOTOR CO., Kansas City, Mo

Overland

"There's the Car I Want—

I want it because it's just my idea of what a car should be—handsome—strong—with a stri.ing and stylish appe.rance—backed by a motor of strength and efficiency."

The man who made this remark was just one of the thousands of OVERLAND admirers at the New York Sh.w and he bought the car to

The people who see the cars are amazed when they learn the OVERLAND value. They cannot believe their own eyes when the magnificent OVERLAND fore door is pointed out to them. This car is such a beauty—such a car of grace and character.

And it is a brand new f re door machine with the flesh ..e by giving ... extra six inches to each seat. Not one of those out-of-date 1910 open front models with a pair of doors patched on the front. The OVERLAND fore door is a brand new creation. Be careful when you purchase your fore door and see that you don't find yourself with an antiquated model. The safe way is to buy an OVERLAND

But aside from our fore door feature the backbone of the Overland is worth your consideration. It is a car truly built to last and work. The daily performance of the motor has no equal of a given size. Always ready—always willing and anxious to work like a beaver—steady, regular and economical. Make a note of the large Overland wheel base—the size of the wheels. Note all the specifications—the inside facts—and see how much you get for your money.

There is an Overland dealer near you look him up. He will show you dollar for dollar value in a motor car or send for catalogue J, which describes the entire line selling from $775 to $1675.

THE WILLYS-OVERLAND COMPANY
Toledo, Ohio

"HUDSON" MIRRORSCOPES

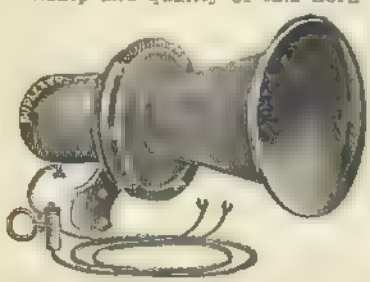
The Hudson Auto Lamp Works, of 1648-50 Broadway, New York City, is manufacturing a line of Mirrorscopes, one style of which is shown by the accompanying cut.

Rear view of the "Hudson" Mirrorscope showing swivel back.

The glasses are all of French plate glass fitted in solid brass mountings. Three styles are furnished, oval, round and square A special feature is the swiveled back which allows the mirror to be turned to any angle.

"DUPLEX" ELECTRIC HORNS

The Electric Auto Horn Co., of Pittsburg, Pa., has recently placed on the market a new electric horn called the "Duplex" A feature in connection with the high class workmanship and quality of this horn is its



"Duplex" Junior Model D Electric Horn price $10 00.

low price. The horn is made up of very few parts and gives a clear and loud tone Every horn is furnished with a special steering wheel button and a three-way cable for connecting. It operates from a six volt storage battery or six dry cells. It is finished in brass, highly polished and is made in two sizes. Model D lists at $10, while Model H, which has a longer projector, lists at $15.

The Sultan Motor Co. have moved their New York office to 1777 Broadway, Room 243

NEW "COES" AUTO WRENCH

The Coes Wrench Co., of Worcester. Mass., whose product is well known, has recently brought out a wrench designed especially for the automobilist and is called

The "Coes" Auto Model Wrench

the Auto Model. The wrench is made in 12 in. size only, opens 2¼ in. and is ⅝ in thick.

APCO PEDALS REDUCED IN PRICE

The Apco rubber pedals, manufactured by the American Pedal Company, 1737 Broadway, New York City, have recently been reduced in price, from $3 00 and $2 50 down to $2 25 and $2.00 per pair. This pedal is made of rubber and is designed to be placed on the regular clutch and brake pedals of the automobile. The corrugated surface of the rubber prevents the feet from slipping and thereby gives the driver a feeling of security. The pedal is made in two sizes.

A NEW FORM OF TROUBLE HUNTER

The Reflectorscope Mfg. Co., White Plains Avenue and 241st Street, New York City, has recently placed on the market a novelty in the form of a trouble hunter.

The "Reflectorscope."

This device is designed for locating trouble in any recess not accessible by the hand or observed by direct vision, in and around the working parts of an automobile The device is very simple in construction as seen by the accompanying cut. The mirror can be tilted to any angle by movement of the forefinger. It is furnished in two styles with hand battery or holder, price is $2 00; with 10 ft. of flexible cord, $2.50 case 50 cents extra.

The J. P. Davis Co., of Dayton Ohio, manufacturers of the well known "Buckeye Cleaner," are starting a special advertising campaign this year in order to place their soap in the hands of every car owner in the country

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Correction: In the February issue on page 258, we inadvertently stated that the whistle made by the Auto Parts Co. was made for 1½ pipe size only whereas it is made for any size. The muffler cut-out, however, manufactured by the same concern and described on page 262 is furnished for 1½ inch pipe size only.

TWO MERCER RACEABOUTS

of 300 cubic inch piston displacement, driven by Hughes and Sherwood

Achieved New Honors in the 500-Mile Indianapolis Race,

Finishing Well up With the Leaders and Breaking Every Speedway Record From 75 Miles up to 500 Miles

for cars of 300 cubic inch and under, regardless of class

Proving conclusively that specially built machines with large motors are not essential to great speed.

The leaders were all cars of nearly double the Mercer's piston displacement.

Both Mercers in this race had a bore and stroke of 4⅜ and 5 inches, with a piston displacement of only 300 cubic inches.

A mile in 51 seconds guaranteed

Raceabout, $2,250

The car for the man demanding speed with safety

Both Mercers averaged over 67 miles per hour
Both Mercers finished in perfect condition

No mechanical work of any sort was done on either car and but one Michelin tire was blown in the entire race.

If you want a car, Mr Motorist, that is not built merely to compete; that is manufactured not assembled; that will go the distance and go fast, and that has the finest lines of any car built in this country, communicate with the

Mercer Automobile Co., Trenton, N. J.

DISTRIBUTORS

Whiting Motor Co., 1802 Broadway, New York
Carroll A. Haines & Co., 2214 Spring Garden St., Phila.
Schillo Motor Sales Co., 945 East Dakin St., Chicago
Fred M Smith, 38 Columbus Ave., Boston.

Empire Tires
WEAR LONGEST

Empire Peerless
RED TUBES.

NO OTHER TUBES ARE QUITE SO GOOD

THIS COMBINATION HAS WON
EVERY ENDURANCE CONTEST
THAT THEY EVER ENTERED

EMPIRE TIRE CO.

TRENTON, N. J.

Branches and Agents throughout United States
and Canada

Here Is a Motor Car for the Whole Family

CHALMERS "Thirty-six," $1800, the latest addition to our line, is distinctly a family car—a car every member can enjoy.

With the Chalmers Self-starter any woman or girl can readily start the motor. No cranking is needed; only a light pressure with the foot on a push button.

Continental Demountable rims and big tires—36" x 4"—rob punctures of their terrors. Pressure tank of self-starter can be used for pumping up tires.

The "Thirty-six" is roomy and luxurious. It is an all-around car. Though not too big and powerful for city use in crowded streets, its long stroke motor has plenty of power for touring anywhere.

Chalmers "Thirty-six" is a family vehicle. In the morning father drives down town—reaching the office quickly, comfortably, full of vim from a ride in the morning air. One of the boys brings the car back for mother to use going shopping.

In the afternoon mother or one of the girls uses the car making calls. Or the young people drive it to the tennis court, or the country club or for a picnic in the woods. Toward evening someone goes down for father. And after dinner the faithful "Thirty-six" is ready for a long drive carrying along the whole family.

An automobile is the greatest thing in the world to keep the family together.

The "Thirty-six" will not require the care of a chauffeur. Father and the boys can take care of it. We agree to teach every buyer, free of charge, how to drive and care for his car.

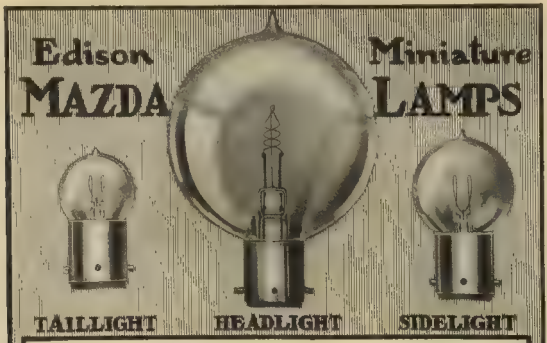
The "Thirty-six" is an economical car—easy on tires, sparing of gasoline, and, under ordinary usage, free of expense for repairs.

For 1912 we continue to build the famous Chalmers "30" and Chalmers "Forty." Last year the "30" sold for $1750, fully equipped. This year, with ventilated fore-doors, magneto, gas lamps, Prest-O-Lite tank, top and windshield—its price is $1500! The 7-passenger "Forty" sells for $2750, fully equipped.

We invite you to see these cars at our dealer's. Ride in them. Consider how well adapted they are for family use. And remember that back of these cars is Chalmers guarantee.

Let us send you catalogue and dealer's name.

Chalmers Motor Company, Detroit, Mich.



PROMINENT manufacturers are equipping their 1912 models with electric lighting systems. Electricity is now accepted as the only modern method of lighting for automobiles. Electric lamps on a car is evidence of progressiveness on the part of the manufacturer and the desire to give the buying public the best of equipment.

Electric lighting is essential to the convenience and comfort of the motorist; it makes night driving a pleasure; all lamps can be controlled from the dash—no matches needed—no odor—or soot—no wicks to trim or burners to clean.

Mazda automobile lamps have been designed after a most careful investigation into the requirements of motor car service—the short, sturdy filament of the Drawn Wire Tungsten has proved satisfactory under all conditions. The better cars and systems include General Electric Lamps. Our bulletin No. 4795 describes the simple manner in which the car can be equipped for electric lighting and gives all information regarding adapters and other necessary material.

General Electric Company

Main Lamp Sales Office:
HARRISON, N. J.

Principal Office:
SCHENECTADY, N. Y.

Sales offices in all large cities

3037

CHAMPION

TRADE-MARK

Champion Spark Plugs

CHAMPION X 75 Cents

A collection of good points best sums up the Champion Spark Plug, and every point is essentially efficient. The plain, unvarnished fact that sixty percent of the 1912 output of American automobile manufacturers will be equipped with Champion Spark Plugs is a sinecure that the Champion will dominate the year.

Just take your pencil and jot down the name "Champion"—then go to your dealer and specify "Champion Spark Plugs." If, however, you drive a Ford, Overland, Reo or Chadwick you know your motor is already equipped with the best spark plug the market affords irrespective of price, for everyone of these cars—together with some fifty other prominent makes—use only Champion Spark Plugs—the Champion *is* Champion.

If results count, you will never buy any but Champion plugs—be sure of the name and beware of the dealer who says some other make is just as good. The dealer who measures up the quality of the plug he carries by comparing it with the Champion, at once admits the Champion Spark Plug's uniform superiority.

Our Equipment Proposition will interest every Manufacturer and Purchasing Agent. Write for it.

The Champion Spark Plug Company
TOLEDO, OHIO

CHAMPION

SPARK PLUGS TERMINALS
MISSKIP DETECTORS CABLE

OUR TRADE MARK IS A GUARANTEE OF QUALITY

Patent applied for.

Patents Pending.

Fasten Wire Terminal Here

Actual Size

Misskip Detector Attached to Spark Plug

PRICE LIST

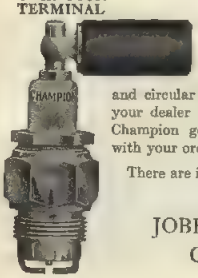
SPARK PLUGS All Sizes		
Regular ... .each,		$1.00
Mica	"	1.00
Magneto Two-point...	"	1.25
Motor-cycle	"	1.00

MISSKIP DETECTOR Ignition Trouble Finder	
1-Cylinder, Single...	$1 00
2-Cylinder, Set 2, . . .	2 00
4-Cylinder, Set 4, ...	4.00
6-Cylinder, Set 6, ...	6.00

Fits any Spark Plug.

¶ THE MISSKIP DETECTOR, with its visible spark completely, insulated by glass tube and rubber protector arms, and ease of adjustment with the motor running, makes it possible for anyone to instantly locate the cause of one's ignition troubles by simply following the directions accompanying every set.

CHAMPION TERMINAL



WRITE AT ONCE

for our

"CHAMPION NEWS"

and circular matter on Champion products. If your dealer or jobber does not carry genuine Champion goods in stock, please send his name with your order direct to us.

There are imitations! WATCH OUT.

JOBBERS AND DEALERS

Get our 1911 prices.

CHAMPION Imported French Cable Highest Quality

THE CHAMPION SPARK PLUG CO., Toledo, Ohio

$1.00

Champion Regular

$.75

Ford Special Plug

The Original and Only Genuine Champion Spark Plugs

NO OILING, SOOTING, or CLEANING

ALL SIZES—A plug for every car, motorcycle, boat or engine. Look for name—"CHAMPION" on every porcelain. A complete line of Mica Champion Plugs also. If your dealer has not the GENUINE CHAMPION in stock, mail your order with remittance direct. We ship postpaid on receipt of order.

SOLE MANUFACTURERS

The Champion Spark Plug Co. :: Toledo, Ohio

CANADIAN REPRESENTATIVES—Sharpe Sales Co., Stair Bldg., Toronto

Investment vs. Expense

800-1100 Lbs. capacity
Price $1600

There are two types of Commercial Cars,—those which forever represent an excessive up-keep cost and those which are economical to maintain.

The Ward Electric

is a good investment because the annual cost for operation and maintenance is reasonable. This ideal condition is the result of two things.—

FIRST,—it is a light electric vehicle.

SECOND,—it is simple in construction, and well made of first-class materials.

We Are Seeking Dealers

of reputable standing and responsibility to devote their time to the WARD interests in their respective territories.

Correspondence Solicited

Ward Motor Vehicle Company
Concord Ave. and E. 143d St.
New York

HYDRAULIC PRESSED STEEL CO.

TRUCK FRAMES

½ TON to 10 TON

HYDRAULIC PRESSED STEEL CO., Cleveland, Ohio
R. B. McMULLEN, General Sales Agent, CHICAGO, ILL.

Repeat Orders In Quantity Lots

Tell The Story of CHASE Success

Orders for from two to thirty Chase Wagons from the same firm are the rule rather than the exception in the Chase factory these days.

The greater number of these quantity orders are from firms who already own from one to a dozen Chase Wagons.

The photograph shows the sixth shipment of wagons to the Bell Telephone Co.

Whether you use one horse or a thousand, the Chase will save you money.

Let us prove it.

Chase Motor Truck Company

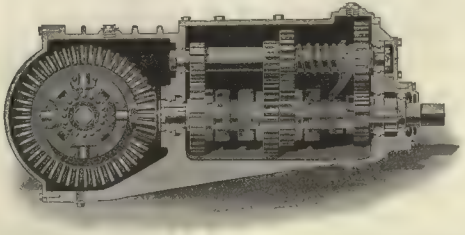
Dept. C

Syracuse, New York, U. S. A.

COTTA TRANSMISSIONS

Shaft or Chain Drive

For Trucks, Tractors and Pleasure Cars



SELECTIVE TYPE GEARS ALWAYS IN MESH

Write for Catalog of 1912 Models

COTTA TRANSMISSION COMPANY ∴ Rockford, Ill.

Motor CHASE Trucks

THE IDEAL SERVICE TYPE

Used By The Leaders Everywhere

FIVE MODELS 1500 to 4000 lbs. Capacity. ALL BODIES.

THEY SOLVE YOUR DELIVERY PROBLEMS

MODEL D, SPECIAL PANEL TOP. CAPACITY 1500 LBS.

Another Great New York Store Buys the Chase

Recently selected by Stern Bros. Repeat order received before first shipment was made. Other large metropolitan stores using the **Chase** include R. H. Macy & Co. and Smith, Gray & Co.

The **Chase** is designed solely for commercial purposes. It gives maximum service at minimum expense. The simplicity and accessibility of the motor, the staunch construction and wonderful economy make it appeal to business houses and corporations throughout the world. They want **Chase** service.

The **Chase** leads all other trucks in sales. It earns repeat orders because its daily record proves its efficiency and economy.

Send for catalogue for facts and figures on motor delivery costs.

CHASE MOTOR TRUCK CO.

334 SOUTH WEST STREET, SYRACUSE, N. Y.

The Gear

Commercial Truck Co., of America
500-1000-2000 lbs.

Hindley Spiral Gear Axles

The Axle

OTIS ELEVATOR COMPANY

Hindley Worm Gear Dept.

Philadelphia, Pennsylvania

Suburban Truck Co., Phila., Pa
1 and 2 Ton Trucks

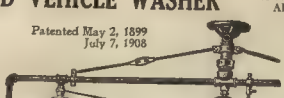
Blair Mfg. Co., Newark, O.
1, 2 and 3 Ton Trucks

OVERHEAD VEHICLE WASHER

A NECESSITY FOR ALL GARAGES

Saves Water
Saves Hose
Saves Time

Patented May 2, 1899
July 7, 1908



Fully Guaranteed

The strongest simplest and best washer made. Head of cast bronze.

ILLUMINATED OR PLAIN

Water shuts off back of all working joints, insuring against leaks and freezing.
Agents wanted. Send for prices.

VEHICLES SPECIALTY CO. : 26 State St., Hartford, Conn.

THE NAME **LEBANON**
IS A STEEL CASTING GUARANTY

Lebanon Steel Casting Company
LEBANON, PA.

TROUBLE PROOF

The Cleveland Carburetter

A NEW FACTOR IN THE AUTOMOBILE FIELD

For 2 or 4 cycle, 4 or 6 cyl. motors. In this carburetter the quality of the mixture must remain uniform at all times without adjustments. There is no guesswork.

Send for catalog

CLEVELAND CARBURETTER COMPANY
Sole Manufacturers and Licensees under Krause Patents
1232-1234 Addison Road - - CLEVELAND, O.

ONCE REX — ALWAYS REX!!

Metal Polishes may come and go,—but

REX METAL CREAM

remains,—proving a more ready seller daily. It is but another instance of the "SURVIVAL OF THE FITTEST." It's different from the ordinary metal polish, in that it is Infinitely Superior.

REX RENEWS

the original brilliancy and lustre,—there is no "white shine" so common to metal polishes, no sediment in the grooves. Economical, quick and effective. At all hardware stores and automobile stations.

NO ACID : : NO GRIT

A sample order will convince you,—May we send one?

Armiger Chemical Company, 2165-67 Austin Avenue CHICAGO, ILL.

NEW TIRE PRICES

Independent Tires

(Wrapped Type)

Size	OUR PRICES: Unguaranteed	Guaranteed
28 x 3	$11.79	$14.69
30 x 3	12.66	15.83
30 x 3½	18.86	23.33
32 x 3½	19.80	24.75
34 x 3½	21.60	27.00
30 x 4	25.26	31.64
31 x 4	26.16	32.70
32 x 4	27.12	33.90
33 x 4	28.14	35.18
34 x 4	28.98	36.23
36 x 4	30.87	38.59
34 x 4½	36.23	45.29

THE SAME TIRE

Flaps to use on Q. D. Rims, $1.50 extra.
Write for prices on other sizes.
State style and make of rim.

Through an improved process it has become possible to manufacture a tire with the saving indicated above.

Will show in space 423
11TH NAT. AUTOMOBILE SHOW
Madison Square Garden
Room 11, Mail Order Department

AUTOMOBILE TIRE COMPANY, Inc.
1625 Broadway, New York City, N. Y.
The Oldest Automobile Tire Jobbing Concern in the U. S. and Largest in the World

The Cleveland Speed and Time Indicator

A Stop Watch on Your Car

The application of the escapement principle of the clock, combining the two elements time and distance—marks a distinct advance in speedometer construction. The time feature is characteristic and distinctive of the Cleveland instruments

These instruments will be on exhibition at Madison Square Garden, January 7th to 21st, during both the pleasure and commercial vehicle automobile shows. A new descriptive catalogue shows the complete line and will be forwarded upon request.

The Cleveland Speed Indicator Co.
1806 Euclid Avenue - Cleveland, Ohio

you can prove it by your watch

"THOROUGHBREDS"

Beilfuss Motors

Every detail finished with unequaled elegance

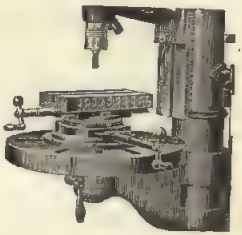
Air Cooled - - 10-12 H. P.
Water Cooled, 10-12 and 18-20 H.P.

Have been giving satisfactory service for years, and for 1911 will be even better than ever.

BEILFUSS MOTORS stand without a peer for endurance and dependability, as these motors represent the maximum of efficiency with the acme of simplicity.

Let us send you our explanatory literature.

BEILFUSS MOTOR COMPANY
LANSING, MICH.



The "Davis" Milling Attachment and Compound Table for the drill press for garage, repair and machine shops. : : :

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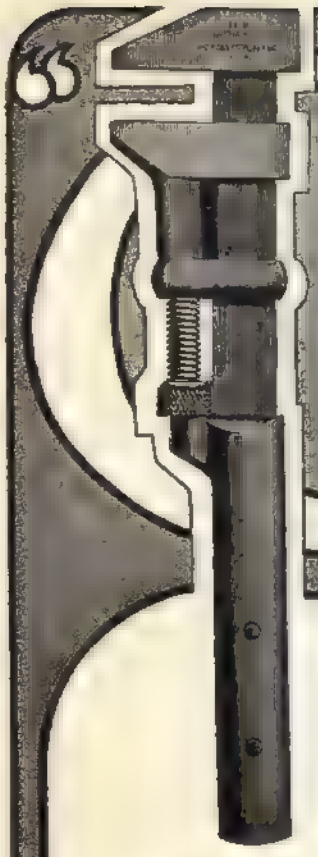
The Hinckley Machine Works
Hinckley, Ill.

TRADE MARK REG. U.S. PAT. OFF.

"COES" WRENCHES



"Coes" Wrenches

Trade Mark Reg. U. S. Pat. Off.

"Glib" talk never sold a good tool to a wise mechanic.

Your best salesman has no difficulty in selling to the man who knows a tool that is recognized as standard—he doesn't have to talk—the tool sells itself.

This applies as well to "Coes" Trade Mark Reg U S Pat Off Wrenches as to any tool made. They are in reality STANDARD. They're known all over the country, and they have been known for more than half a century. They're known, not alone by the name "Coes" Trade Mark Reg. U. S. Pat. Off. but they're recognized as superior in design, construction, practicability in their ease and correctness of operation, and for their ability to withstand every wrench strain. "Initially, slightly higher in cost—ultimately, the cheapest and best"—true as gospel—something that you know, and your trade knows. And the "slightly higher cost" has in no way retarded the sales of "Coes" Trade Mark Reg. U. S. Pat. Off. Wrenches—they're worth more, and you can get more for them.

For sure profits, stock and sell "Coes" Trade Mark Reg U S. Pat. Off. Wrenches.

Coes Wrench Company

Established 1841 in

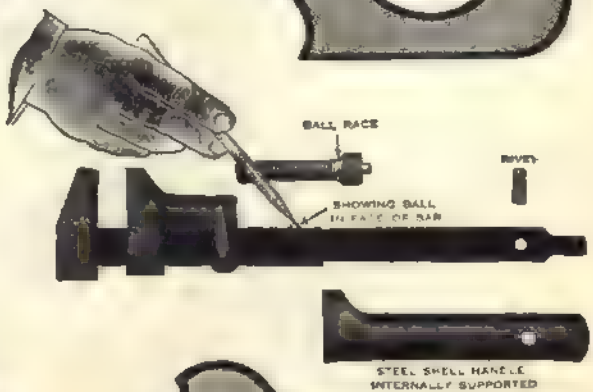
Worcester, Mass.,

U. S. A.

Agents:

J. C. McCARTY & CO.
21 Murray St.

JOHN H. GRAHAM & CO.
113 Chambers St.
NEW YORK



I·A·H

Stanley Tools

STANLEY No. 50½ MITRE BOX has a single-piece Frame, both the Base and the Back of which are accurately machined.

THE SAW GUIDE UPRIGHTS are steel rods and carry the saw guides in which the saw works. The Uprights, which are instantly removable, are adjustable.

The special feature of this Box is that **any ordinary Panel Saw may be used** in place of a Back Saw, if desired.

A strong and accurate Tool at a moderate price.

No. 50½ ..... Price, each, $6.50
No. 60½, with 20 in. Back Saw..... " " 9.50

STANLEY THE WORLD OVER

Stanley Rule & Level Co.
NEW BRITAIN, CONN. U.S.A.

"On The Level" Talk

By the Man from Akron

"Every one of you dealers who realizes the necessity and big advantage of selling the very best tools made should get full particulars about Akron Levels before another day goes by.

Fill out the coupon below, asking us to tell you why Akron Eclipse Levels are the best spirit levels ever made for carpenters, masons, concrete men and everybody who uses a level. Let us tell you why

Akron Eclipse Levels

will satisfy every customer and bring new trade to your store—the better class of trade—the kind who want the best tools and are willing to pay what good tools are worth.

Let us show you how you can make more profit and build up better business by handling Akron Levels.

Akron Levels are [illegible] accuracy, the only levels having the Sweet Lines, which show you EXACTLY, or otherwise [illegible] are positively superior in every way to any other make of spirit levels, yet they do not cost any more and your margin of profit is greater.

Isn't it worth a postal to find out about a good thing?

Just fill out the coupon and paste it to a postal card and send to us. We will send you catalog, price list and name of nearest jobber who can supply you.

The BAKER, McMILLEN CO., Dept. B, Akron, O.

AKRON LEVEL

THE BAKER McMILLEN CO. Dept. B, Akron, Ohio, U.S.A.
Please send me catalog and price list of Akron Levels and name of nearest jobber.

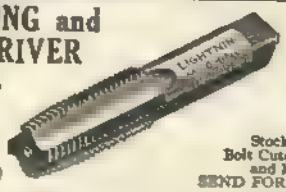
Name _____

Address _____

Planes and Plane Irons

THE CHAPIN-STEPHENS CO.
UNION FACTORY
Pine Meadow, Conn., U. S. A.

LIGHTNING and GREEN RIVER BRANDS

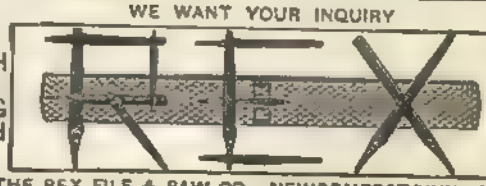


TAPS, SCREW PLATES

WILEY & RUSSELL MFG. CO.
Greenfield, Mass., U. S. A.

Stocks, Dies, Reamers, Bolt Cutters, Blacksmiths' and Machinists' Tools
SEND FOR CATALOG 34A

WE WANT YOUR INQUIRY

HIGH  GRADE

THE REX FILE & SAW CO., NEWCOMERSTOWN, OHIO

AMERICAN TOOL CHEST CO.

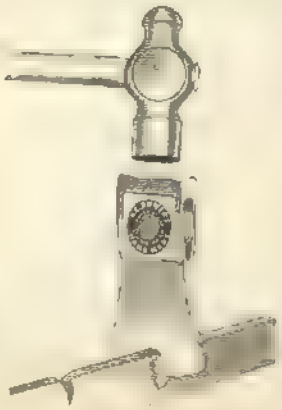
FACTORY AND SALESROOM
209 WEST HOUSTON ST. NEW YORK, U.S.A.
MANUFACTURERS OF
TOOL CHESTS, ALL SIZES, COMPLETE WITH TOOLS, FOR BOYS, YOUTHS, GENTLEMEN, FARMERS, RAILROADS AND CARPENTERS USE. ALSO TOOL CABINETS, MACHINISTS' AND PIPE FITTERS' EMPTY TOOL CHESTS. AGENTS FOR STEEL TOOL CHESTS.
SEND FOR LATEST CATALOGUE.

AXES

The "Axe Through Iron" is the best made.

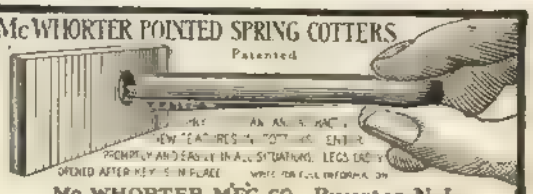
MANUFACTURED BY

ROMER AXE CO.
DUNKIRK N. Y.
Write for Catalogue



McWHORTER POINTED SPRING COTTERS

Patented



Mc WHORTER MFG. CO. Riverton, N.J.

BARRETT STANDARD Glass Cutters

SOLD ALL OVER THE WORLD—MANY STYLES

W. L. BARRETT, Bristol, Conn., U. S. A.

THERE ISN'T A DOUBT

AS TO THE PRACTICABILITY AND ECONOMY OF

ELECTRIC WELDING

We are welding **automobile parts** for a **large number** of the **manufacturers. Parts,** too, that are **subjected** to the **greatest stress** and upon which **absolute dependence** must be placed Axles, Gear Casings, Radius and Brake Rods, Pedal Levers, Steering Knuckles, Spring Hangers, Connecting Rods and Propeller Shafts are some of the articles being furnished. Our line of work eliminates the necessity of maintaining expensive forging dies.

MOTORCYCLE AND BICYCLE PARTS

THE STANDARD WELDING CO.

CHICAGO **CLEVELAND** **NEW YORK**

THE DANGER SIGNAL

HAM'S MARS

There is immense satisfaction in having a lamp on your car

THAT STAYS LIT

Of course lamps do blow and jar out, but they are not

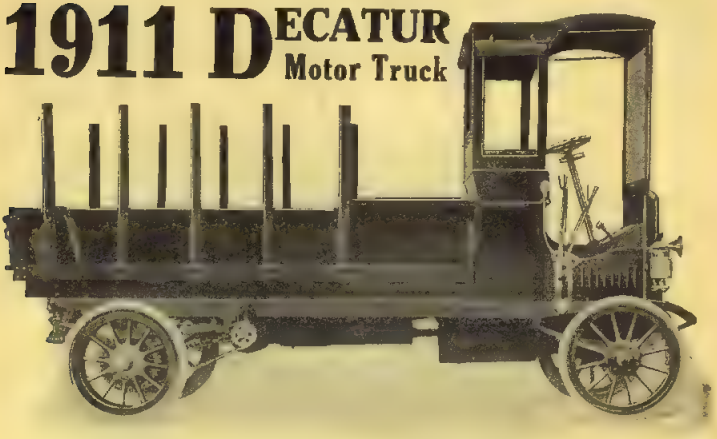
"Ham" Lamps

The superior construction, close attention to detail, peerless workmanship and finish, coupled with elegance of design, places our products far in advance of competitors.

When you want a Tail Lamp—the best that's made, order **HAM'S MARS** and you will bless the day we introduced it to your notice.

C. T. HAM MFG. COMPANY, ROCHESTER, NEW YORK

1911 DECATUR Motor Truck



MODEL H—4 Cylinder, Thirty Horse Power, Capacity, 2500 lbs. Price, $2000

The Decatur Motor Truck has made good in the most difficult Motor Truck City in the United States.

Cincinnati has always been a stumbling block for Truck manufacturers. The steep hills and heavy loads that must be carried over them have broken down many a truck that has given good, satisfactory results in other large cities.

The Decatur Model H is designed and especially built to meet just such conditions. For over **two years** we have had a **Decatur Truck** in daily service in this hard city, and it has been successfully meeting every road and load condition. **Decatur Trucks** are built of the highest quality of materials, every part being interchangeable and standardized to a fraction of an inch. Nothing has been cheapened to save expense. The result is an easy-running, smooth, powerful and trustworthy truck of unusual merit and endurance.

Decatur Trucks are loaded to their maximum capacity and thoroughly tested on hills and bad roads before being shipped from our factory. An important feature of construction is the 129-inch wheel base, its length doing away with excessive overhang of the body.

Decatur Trucks are built in one size only, this being our Model H, 2500-lb. **Truck,** which we build exclusively. The Chassis can be fitted with any style or type of body desired, the seat being a part of our standard Chassis.

SPECIFICATIONS, MODEL H

Motor—Rutenber, 4 x 4, 30 H. P.
Ignition—Simms high tension magneto.
Cooling—Water, by gear driven pump.
Lubrication—Self contained in motor.
Gear Change—3 speeds forward and reverse.
Wheel Base—129 inches.
Front Springs—2 inches wide, 36 inches long, semi-elliptic.
Frame—4-inch channel cold rolled steel.
Rear Springs—2-inch platform, 46 inches long.
Tires—32 x 3 front, 32 x 3½ rear, Goodyear hard rubber base.
Wheels—32-inch, 12 spoke.
Axles—Front, 2 x 2½; rear, 1¾ dead square.
Weight—3800 lbs.
Clutch—Famous Hele Shaw multiple disc running in oil.
Transmission—Warner "gears Vanadium heat treated."
Drive—Double chains to rear wheels, from jack shaft.
Brakes—Two sets internal, one square inch braking surface to every 14 lbs.
Control—Fixed ignition foot throttle.
Carbureter—Schebler automatic.
Capacity—2500 lbs.
Body Space—5 feet 4 inches wide, 10 feet 6 inches back of driver's seat.
Tank Capacity—25 gallons.
Speed—12 miles.
Equipment—Full set of tools, two side lamps, tail lamp and horn.
Price—Chassis, $1800, with standard express or open stake body, $2000.

Live Dealers who are responsible financially and otherwise, communicate with us at once and represent a truck that is beyond the experimental stage. We want **agents** to take care of the increasing trade. **Write for Territory TO-DAY.**

DECATUR MOTOR CAR COMPANY

Successors Coppock Motor Car Company, Manufacturers

FACTORY: DECATUR, INDIANA

THE GRAMM

GRAMM THREE-TON TRUCK

Furniture Dealers, Department Store Managers, Brewers, etc.:

The **Gramm Truck** is the best for your use because it has demonstrated its supremacy in gruelling road tests and by the satisfactory service it is giving merchants to-day.

It is built at our new plant at Lima, Ohio—one of the best equipped plants in existence.

The **Gramm Trucks**, from one to five tons, will give you a continuous satisfactory service, will greatly reduce your delivery cost and will enable you to increase your business by covering a larger territory than can be covered by Horse-Drawn Vehicles.

Exclusive **Gramm Features** mean much to prospective truck purchasers.

The Gramm combines Power, Simplicity, Accessibility and Economy.

INVITATION TO MERCHANTS AND PROSPECTIVE AGENTS

We will exhibit at the **Grand Central Palace Show,** starting December 31st, in the largest space, and will have on display the most complete line of **Trucks** ever exhibited

Visit us, if possible, and let us show you why the **Gramm Truck** is the leader in the Commercial Car Field

If unable to attend the show, write us for a demonstration.

The Gramm Motor Car Company

LIMA, OHIO, U. S. A.

DIAMOND GLASSWARE

9-IN. NAPPY

4-OZ. OIL NO. 6 STOPPER

TRADE H MARK

NO. 352—8-IN. VASE

A. H. HEISEY & CO. INC.

NEWARK :: OHIO ::

NEW YORK OFFICE, 25 West Broadway
BALTIMORE OFFICE, 122 West Baltimore Street
PHILADELPHIA OFFICE, Denckla Building, 11th and Market Streets
BOSTON OFFICE, 144 Congress Street
CHICAGO OFFICE, 510 Heyworth Building, 42 Madison Street

CHATILLON SPRING SCALES

The Standard for Seventy-five Years

SEVENTY-FIFTH ANNIVERSARY 1832 1907

MADE BY

JOHN CHATILLON & SONS

85-93 Cliff Street NEW YORK

HERO STANDARD METALWARE

THE MOST COMPLETE OILERS LINE IN THE COUNTRY

ALUMINUM AND OTHER NOVELTIES

THE HERO MANUFACTURING COMPANY, PHILA., PA.

"BROOKLYN"

Cold Handle Polished Steel Skillets

are made of the finest Cold Rolled Steel and Highly Polished

¶ The Genuine Cold Handle "ACME FRY PANS," "EMPIRE SPIDERS," and "BROOKLYN SKILLETS" are made only by the

New York Stamping Company North 11th and Berry Sts. BROOKLYN, N. Y., U. S. A.

Write for Catalogue and order through your Jobber

Hotel Utensils, Soup Stock Pots, Cruller Pots, Bakers' Bowls, etc.

Made of Seamless Steel

Complete Line of Jobbers' Extra Heavy, Retinned Hotel Ware

Seamless Steel Gasoline Tanks for Autos and Boats

Janney, Steinmetz & Co.
PHILADELPHIA, PA.
New York Office:
HUDSON TERMINAL BLDG., 30 CHURCH ST.

Perfection No. 2

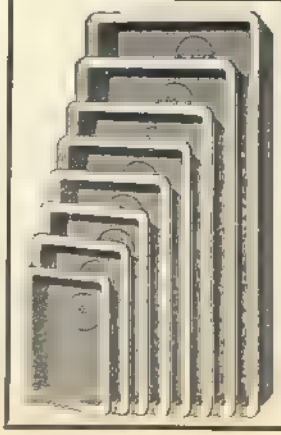
Best "popular-priced" Grinder on the market. Dirtless, Chainless, Noiseless, Cut Gear. Has Corundum grinding wheel 6 x 1¼. Second Best is Perfection No. 1—same as No. 2—just smaller, its Corundum wheel being 5 x 1. Full details—did you say?

EL STARR MFG. CO.
Milwaukee, Wis.
New York Office, 37 Warren St.
SELL NO AGENTS
Wm. P. Vrooman, Cleveland, O., D. P. Hale, Sandersville, Ga., The John A. Gregg Co., Burlington, Iowa; Hughson & Merton, Inc., San Francisco, Cal., Myles A. Hoffman & Co. 43-6 Great Tower St., London, E. C.

Useeit Water Coolers

They sell as soon as shown and pay big profits. Made in eight sizes, to fit any bottle. To help make sales we will send a Handsome Display Cooler to any first-class dealer *without charge* for display purposes. *Send for Booklet.*

CONSUMERS' COOLER CO.
CHICAGO, ILL. NEW YORK CITY
General Offices and Factory: MICHIGAN CITY, INDIANA



BARNES'

Porcelain Enameled KITCHEN SINKS

are unsurpassed for quality, design and color of enamel.

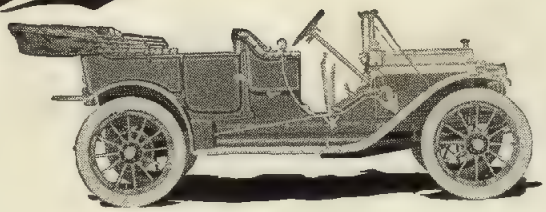
The dealer who handles Barnes' Sinks secures the cream of the sink trade in his locality, and besides has a lot of satisfied customers to his credit.

THE BARNES MFG. CO.
550 North Main St.
MANSFIELD, OHIO

Manufacturers of over 300 styles and sizes of Pumps for all purposes.

WRITE FOR SPECIAL PRICES

Dorris 1911 Cars



$2500, Including

Top, Windshield, Tire Carrier, Speedometer, Prest-o-Lite Tank
36 x 4 Quick Demountable Detachable Rims

Dorris Motor Car Company :: St. Louis, Mo.

THE
A4—2 cyl., 20 h.p. $850
A5—4 cyl., 30 h.p. $1250
(Like cut)

McIntyre

PRICE, $1250

Licensed under Selden Patent

1911
T5—30 h.p. $1150
M5—40 h.p. $1650
T1—40 h.p. $1850

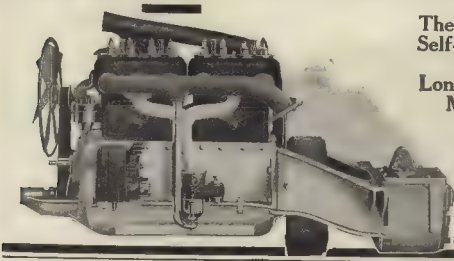
A Snap for Agents

Write Now for Territory

See exhibit at the Chicago Show, Space B-2, Main Floor, First Regiment Armory

W. H. McINTYRE CO., Auburn, Ind.

See It "Go"—At The Show



The Famous Self-Starting 4x6 Long Stroke Motor

At New York Show—
Madison Square Garden—
Space No. 107.

At Chicago Show—
First Regiment Armory—
Space B2, Main Floor.

Don't fail to see the longest stroke motor (based on bore) made in America in operation at the Motor shows. The motor that has made possible the marvelous road record of the invincible

"DREADNOUGHT" Moline "THIRTY-FIVE"

Winner of the 1911 Chicago Reliability Run.
Winner of the 1910 Chicago Reliability Run.
Winner of the 1911 Fuel Economy Run.
Winner of the 1910 Annual Glidden Run, Chicago Trophy.

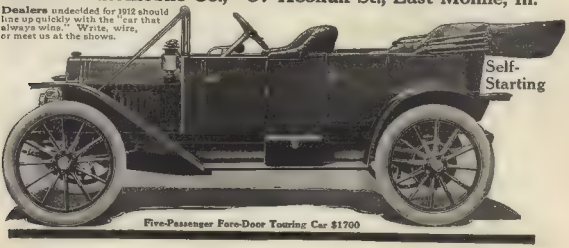
See this wonderful 4x6 Motor in operation and you will readily understand why it **always wins** over all competition and why it has

Greater Power at all Speeds.
Less Vibration.
A Smoother, Quieter Engine.
Lower Temperature.
Greater Durability and Longer Life.
Economy in Fuel and up-keep.

If you are not able to attend the motor shows, let us mail you our latest literature describing the four handsome new models of the "Dreadnought" Moline "Thirty-Five" at $1600 to $1700, containing also the interesting story of the four sweeping victories mentioned above.

Moline Automobile Co., 37 Keokuk St., East Moline, Ill.

Dealers undecided for 1912 should line up quickly with the "car that always wins." Write, wire, or meet us at the shows.



Self-Starting

Five-Passenger Fore-Door Touring Car $1700

HIGH GRADE AUTOMOBILE HORNS

Our prices are very "attractive"

37 New Styles of Horns

We produce 4,500 Auto-Horns weekly

For the last 8 years we have supplied and are still supplying the best grade Automobile Manufacturers with our horns

IT is a known fact that we are the pioneer Automobile Horn Manufacturers in America. Our vast experience has made us masters in this line. The supremacy of our product can be easily demonstrated by a rigid comparison with the imitation. We manufacture high-grade horns only. Made from best material and most advanced manufacturing methods.

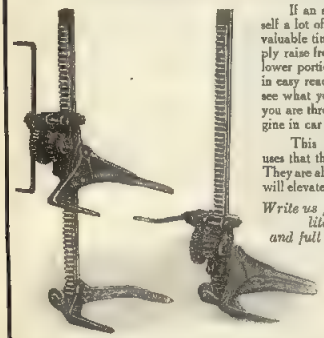
AUTOMOBILE SUPPLY MANUFACTURING CO.

220-222 Taaffe Place

BROOKLYN - - N. Y.

Big 4 Auto Jack Equipment for Garages

There is absolutely no need to lift your engines out of your cars with a crane when all adjustments can be made easily, accurately and quickly by raising up either one or both ends of your car with the Big 4 Auto Jacks. They have actually been tested to elevate THREE TONS 34 inches clear of the floor.

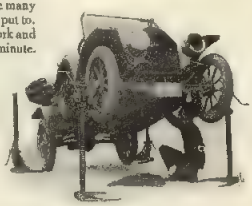


If an adjustment is necessary in your Crank Case, don't make yourself a lot of work by raising the engines out with a crane, because it takes valuable time to disconnect and connect them together again. But simply raise front end of car to desired height with our Jacks and remove lower portion of crank case. You have plenty of room, light, with tools in easy reach, and your car is in an inclined position so that you can see what you are doing. After the adjustment is made, lower car and you are through instead of working a half day longer to connect the engine in car again.

This is but one of the many uses that these Jacks can be put to. They are always ready for work and will elevate a car in half a minute.

Write us for descriptive literature and full information

PATD.



It is easy to adjust and inspect the under part of the car when in an inclined position

G. E. TRAVIS CO., Factory and Main Office. **Henry, Illinois**

Remy Service

Constant Service is the Watchword of the makers of Remy ignition devices. A Service Department, with Service Stations in Leading Automobile Centers, renders prompt, courteous and intelligent Service to all Remy users.

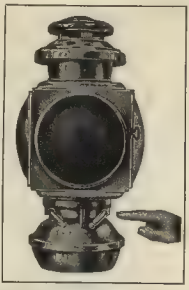
Your attention is called to the following Remy Service Stations

Remy Electric Co., Automobile Bldg., Broadway at 54th, NEW YORK.
Remy Electric Co., 214 Pleasant St., BOSTON.
Remy Electric Co., 1409-23 Michigan Ave., CHICAGO.
Remy Electric Co., 476 Woodward Ave., DETROIT.
Remy Electric Co., 406 E. 15th St., KANSAS CITY.
Remy Electric Co., 724 N. Meridian St., INDIANAPOLIS.
Remy Electric Co., 170 Golden Gate Ave., SAN FRANCISCO.
Hollis Electric Co., 12 S. Eighth St., MINNEAPOLIS.
J. H. McCullough & Son, 219 N. Broad St., PHILADELPHIA.
Auto Equipment Co., 1518 Broadway, DENVER.
Auto Motor Equipment Co., 717 S. Olive St., LOS ANGELES.
Russel Motor Car Co., Ltd., WEST TORONTO, CANADA.
Russel Motor Car Co., Ltd., MELBOURNE, AUSTRALIA

Specify Remy Equipment Upon Your Car
You will Benefit by Remy Service

Remy Electric Company
BATTERIES - ANDERSON, INDIANA, GEN. OFFICES

OUR reputation as the largest producers of lamps in the world is sustained by every lamp leaving our factory.



EDMUNDS & JONES MFG. CO.
DETROIT, MICH.

SEAMLESS TUBING

BRASS and COPPER

Prompt Delivery
Best Quality
Best Price

BUFFALO TUBE CO.
17th and Cascade Sts.
Erie, Pa.

THE EVERITT "SIX"
Price $1850

The First Chrome-Nickel Steel Car Ever Offered at a Moderate Price

No one who has ever driven a "Six" will question the remarkable efficiency, power and smoothness of operation offered in this type. There is an overlap of power impulses and a consequent smooth flow of energy as uninterrupted as the flow of water from a pipe.

Six-Cylinder, 48 h.p., Long-Stroke Motor; Chrome-Nickel Steel throughout; 36 x 4-inch Tires; Demountable Rims; Cellular Radiator; 126½-inch Wheel-base; Everitt Self-Starting Device, Top, Windshield and Speedometer included; Dual Ignition; manufactured complete in one factory.

The Metzger Motor Car Co.
105 MILWAUKEE AVE., DETROIT, MICH.

Electric Horn

Runs on Dry Cells or Storage Batteries.

A strong, penetrating, warning signal clears the way.

Made especially for Automobiles.

THE ONEITA

"Hear That Tone"

Retails at $15.00

Liberal Discount to Manufacturers and Jobbers

Electric Horn & Specialty Company

UTICA, N. Y.

QUALITY

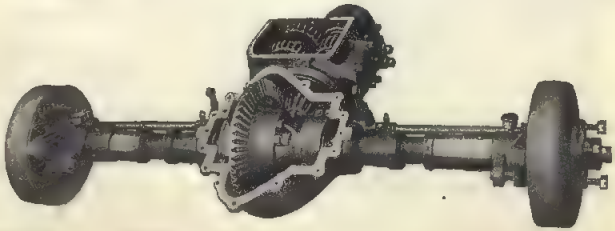
Unit Power Plant Motors

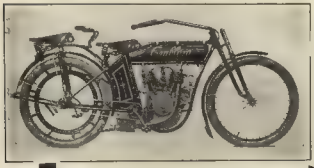
TRANSMISSIONS DIFFERENTIALS

STEERING GEARS

"TRUCK PARTS" CONTROL LEVERS

Warner Mfg. Co. Toledo, Ohio





THE MACHINE YOU WANT AT the PRICE YOU OUGHT TO PAY

YOU CANNOT FIND BETTER VALUE ANYWHERE AT EVEN HIGHER PRICE

This is only one of our several models for 1912. The 4-HP battery single at $175, and the same machine with magneto at $200; the 5 HP battery single at $200 and its counterpart with magneto at $225; and the big, powerful 7 HP magneto twin at $250, gives dealer and rider a wide range for selection. And, most important of all—

EVERY MACHINE FITTED WITH FREE ENGINE AND VARIABLE SPEED CLUTCH Without EXTRA CHARGE

Our line of famous motorcycles is the natural outcome of many years' experience in the manufacture of high-grade bicycles. Also, do not forget that we still are

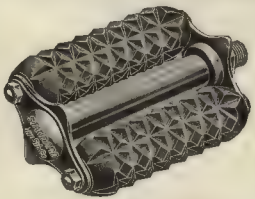
MAKING MORE and BETTER BICYCLES than EVER BEFORE

and if we are not represented in your vicinity it is strictly up to you to "Obey that Impulse" and write today for agency proposition.

EMBLEM MANUFACTURING CO. (Member M. M. A.), ANGOLA, ERIE CO., NEW YORK

Distributors for California, John T. Bill & Co., Los Angeles. For Oregon, Ballou & Wright, Portland. For Washington, F. M. Spinning, Seattle. For the South, Henry Keidel & Co., Baltimore, Md.

Standard Motorcycle Parts



No 3 MOTOR CYCLE PEDAL

are just a little bit better than anything else of the kind on the market. That's why machines that are **STANDARD** equipped sell quicker than others.

STANDARD PEDALS wear well. They are strong and light, and the deep corrugations in the rubber hold the foot firmly and absorb vibration. They are reversible, thus enabling the rider to get the fullest service from them. Write for details of our complete line, which includes **Spokes** and **Nipples, Bridgeport, Star** and **Standard Bicycle Pedals, Sager** and **Standard Toe Clips.**

The Standard Co., Torrington, Conn.

It is legitimately high-priced

The FINEST MOTORCYCLE *in the* WORLD

Three Models—Belt and Chain
Two Singles—One Big Twin

Free Engine Clutches, Spring Seat Post, Two Brakes, Double Oiling System, Two beautiful colors and other special features.

See us at New York and Chicago Shows.

Reading Standard Company
Dept. G **Reading, Pa.**

FREE SAMPLE COPIES

OF

THE COMMERCIAL CAR JOURNAL

will be sent to any merchant, manufacturer or dealer who is interested in up-to-date delivery service.

Send request on your letterhead and we will mail, postpaid, at once, a copy of America's best journal devoted to commercial car interests. "You need it in your business."

ADDRESS DEPT. CCJ

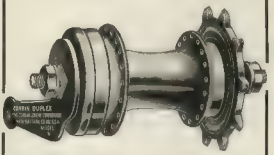
CHILTON COMPANY
Market and 49th Streets, Philadelphia

Corbin

Two-Speed
Coaster Brake

(For Bicycles)

and why it should be the first thought of when buying.



The direct gearing of the Corbin Coaster Brake makes it absolutely reliable and gives an increase of power.

Speed changes are made automatically and instantaneously without back pedaling.

It can be run either backward or forward and has no shifting levers. Is simple, scientifically designed and practically indestructible.

There is no shock to the gears in operating the Corbin Coaster Brake. Can be used as a plain coaster brake by removing the high-speed clutch.

Specify CORBIN. For sale by leading Jobbers and Dealers everywhere.

Send for Catalog

The Corbin Screw Corporation
NEW BRITAIN, CONN.

Western Branch:
65-67 West Lake Street, Chicago, Ill.

(Licensed Coaster Brake Manufacturers)

QUALITY AND SATISFACTION

ARE FOUND IN THE

EMBLEM

MOTORCYCLE AND BICYCLE

4-5 H. P. SINGLE AND 7 H. P. TWIN CYLINDER

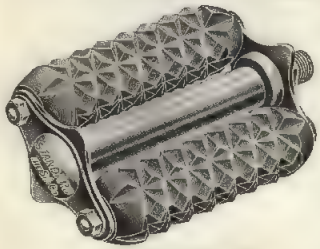
POWER AND SPEED

RESPONSIBLE SELLING REPRESENTATIVES WANTED

EMBLEM MFG. CO., Angola (Erie Co.), N. Y.

Distributors for New England: Bi Motor Equipment Co., 1777 Portland St., Boston, Mass.

Standard Motorcycle Parts



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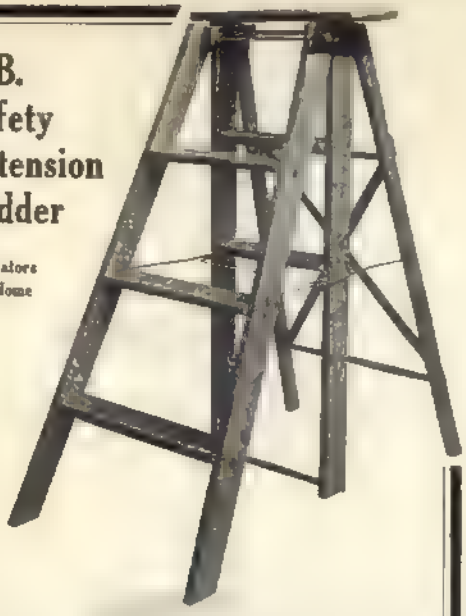
The Standard Co., Torrington, Conn.

O.B. Safety Extension Ladder

For Decorators and Home Use



A New Step Ladder that is selling rapidly to everybody who uses a step ladder. The Extension feature makes it instantly adjustable to various heights—an exclusive selling point. A perfectly safe ladder to use because made extra strong and practically indestructible. Every family in your locality is a possible customer for one. No stock complete without it. Made only by

Wausau Box and Lumber Co.

Wausau, Wisconsin

SHE doesn't have to call the hired man to move the

Everson Vacuum Cleaner

The only real portable cleaner with a high Effective Vacuum

Weight 35 lbs.

List Price $80.00 with 12 Tools

1-6 H. P. Holtzer-Cabot Motor.

Indestructible Vulcanized Fibre Case, non-conductor of electricity.

Safety valve to prevent damaging motor.

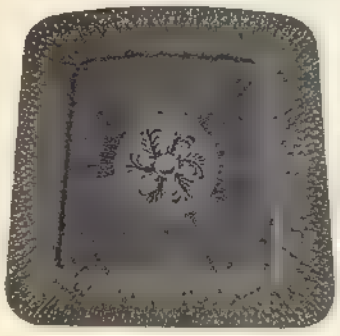
SIMPLE SAFE SUFFICIENT

Write us for trade prices

EVERSON MFG. CO.

34 Oliver Street BOSTON, MASS

"BUFFALO BRAND" **FIBRE CHAIR SEATS**

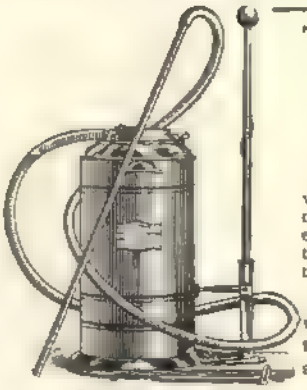


Pattern No. 185

Made from VERY BEST QUALITY of FIBRE BOARD with our metal BEAT ER EDGE PIN SE[illegible] They resist the [illegible] re Leather Seats recently. Special attention is called to the UNIFORM MARKINGS on all our seats. Sixteen handsome patterns, four colors, sizes 10 to 18 in.

Buffalo Decorative Fibre Company

BUFFALO, NEW YORK



The Crown Vacuum Cleaner

An $18.00 hand-power vacuum cleaner that will do the work of the highest price machines. Built to give thorough satisfaction and last a lifetime.

We want dealers to write us for exclusiv territory proposition and complete details.

Gray Iron Foundry Co. READING PA.

COTTON CLOTHES LINES

MOPS, TWINES, WICKING MACHINERY, WASTE and ROPES, manufactured by

ESTES MILLS Successors to J. H. Estes & Sons Fall River, Mass.

N. Y. Office, 97 Warren St. Tel. 2511 Cortlandt

Bay State Mop Co.

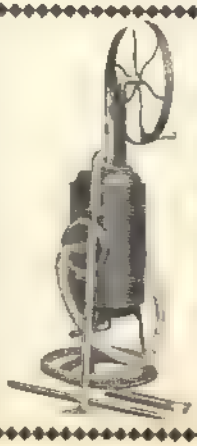
WM. H. CURTIS, Prop'r, Woburn, Mass.

Manufacturer and Wholesale Dealer in all kinds of

MOPS

Yacht and Hard-wood Floor Mops a Specialty.

SEND FOR CATALOGUE.



"It breathes the dust— you don't.

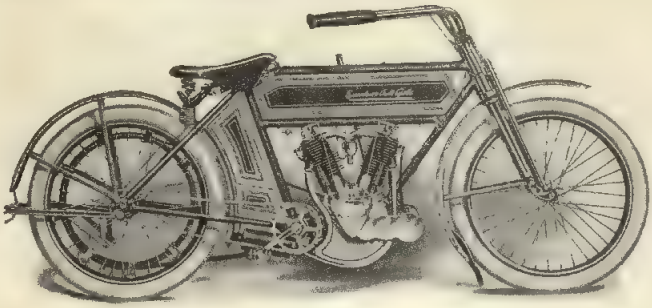
REGENT VACUUM CLEANER

New in principle and design. The easiest running and most powerful hand-power machine made. The machine for those that have become dissatisfied with the ordinary machine and want something better in fact, the best there is. Write us to-day for exclusive sale for your city.

RAPID SPECIALTY CO.

CARNEGIE, PA.

EXCELSIOR AUTO-CYCLE



The Twin That is Right

¶ A rational combination of power and economy that affords the highest degree of practical efficiency.

¶ The same smooth starting, free motor effect that has made the Excelsior Single the leader of American motorcycles with the most powerful motor of the 50 cubic inch class ever built.

¶ Low Saddle, Perfect Balance and Positive Grip Control.

¶ The Excelsior straight-line frame, the only motorcycle frame made with drop forged fittings throughout.

¶ Speed: Six to Sixty miles per hour, as long and as far as you like.

¶ **Price, complete, $310.**

¶ Write for Catalog A-11.

Excelsior Motor & Mfg. Company

Randolph Street Bridge, Chicago, Ill.

In Quality Lies Confidence
Service and Satisfaction

THE QUALITY OF THE

EXCELSIOR AUTO-CYCLE

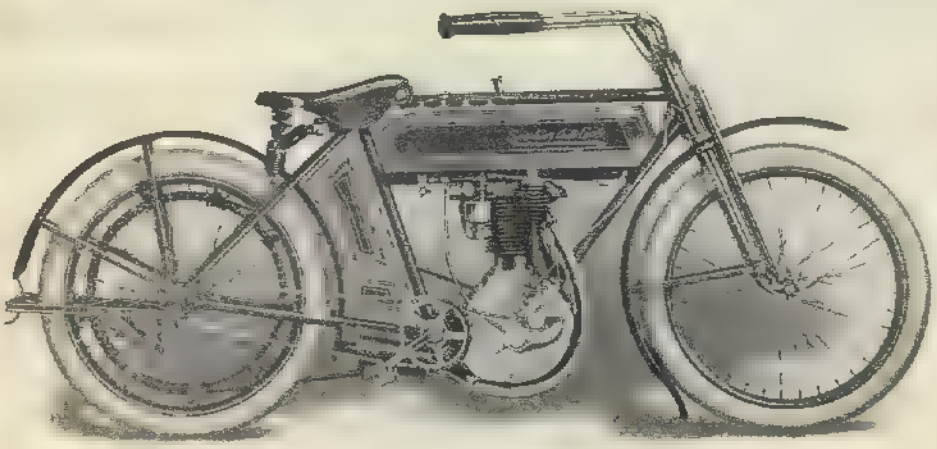
is so predominant and tangible that it gives the rider utmost confidence in his mount and by sustaining that confidence, by absolute reliability and steady service, affords a degree of satisfaction attained through no other means of transportation.

The Quality of the Excelsior is based on drop forged frame parts, scientifically correct design, the finest material and perfect workmanship in a machine of ample power and perfect balance and control.

1911 Models include single and twin cylinder motors, battery and magneto ignition.

Write now for Catalog A 11. *Immediate delivery on all models. Some territory still open for real, live dealers.*

Excelsior Supply Company
400 W. Randolph Street - - CHICAGO, ILL.



Model KM, Magneto Ignition, $250.00

EXCELSIOR CARBURETOR

"The Ball in the Tube Does It."

C. B. BARKER & CO.

42 WEST 15th STREET, NEW YORK

IN THE BASEMENT AT THE

MADISON SQUARE GARDEN SHOW

TWO WEEKS—JAN. 6–20, 1912

WRITE FOR BOOKLET. *Manufactured by*

EXCELSIOR NEEDLE CO., Torrington, Conn.

CHICAGO:
Excelsior Gen'l Supplies Co., 1436 Michigan Ave.

PHILADELPHIA
Manufacturers' Supplies Co., Juniper & Cherry Sts.

BOSTON
Bi-Motor Equipment Co., 177 Portland St.

$18.00

THE "LONG" HORN

NEVER OUT OF ORDER

Because there are no batteries to run down, no wiring to shake loose, no troublesome, flexible shaft, no friction pulley, and it

COSTS NOTHING TO OPERATE IT

This horn operates instantly, never "balks" when needed in that "tight place" where a second's delay means damage and perhaps loss of life.

The volume of sound can be regulated to suit the requirement.

Operates with the slightest pressure.

The handsome design of the "Long" horn adds to the appearance of your car.

Finished in Polished Brass, Black or any other color Enamel, and White Nickel.

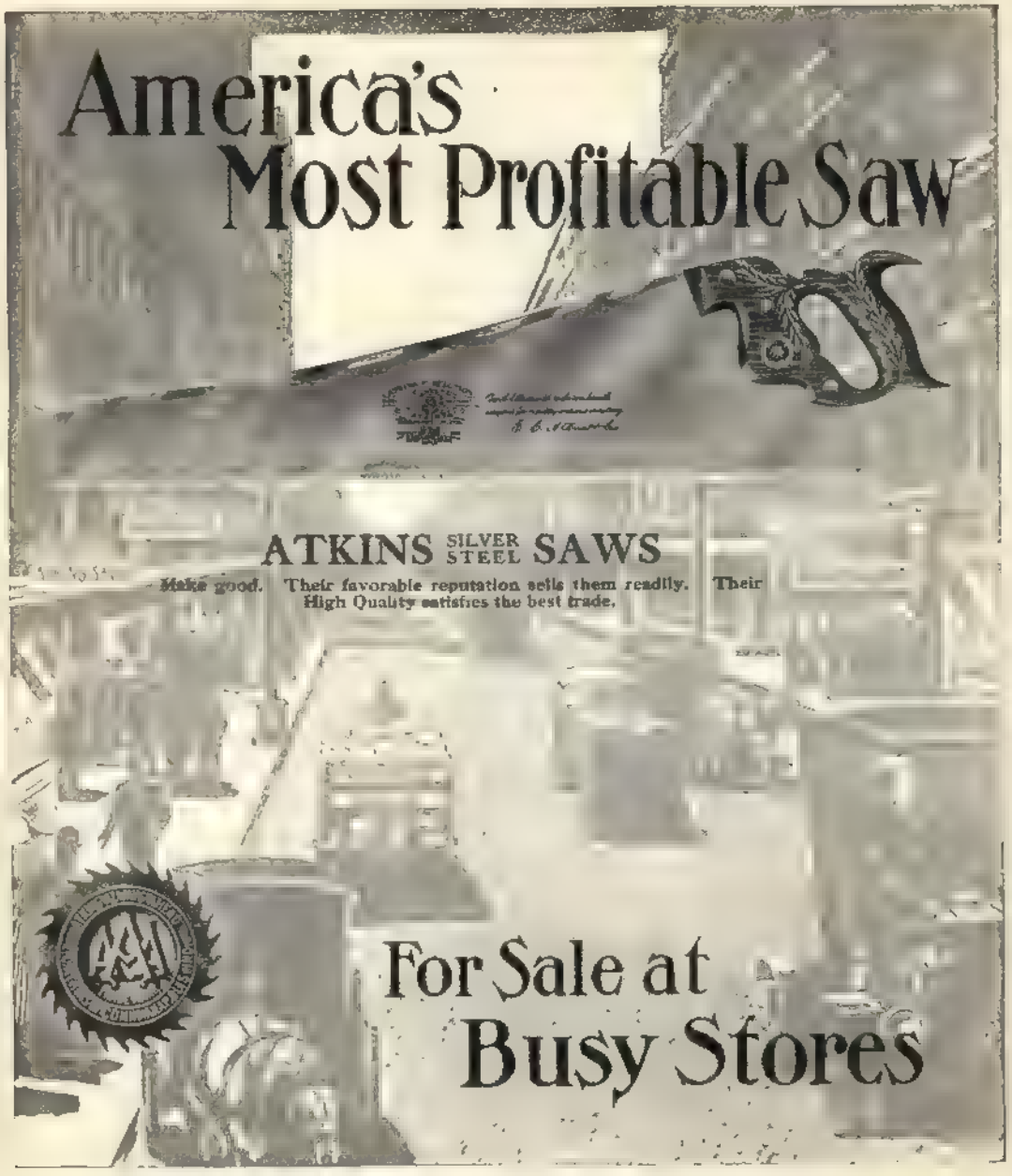
THE G. PIEL COMPANY

MAIN OFFICE AND FACTORY:

13th Street and Boulevard LONG ISLAND CITY, N. Y.

Sales and Attaching Rooms, 51 W. 63d St., Cor. Broadway, New York City

Philadelphia Branch, 1416 Vine Street Boston Branch, 109 Massachusetts Ave.
Chicago Branch, 1430 Michigan Boulevard


America's
Most Profitable Saw
ATKINS SILVER STEEL SAWS
Make good. Their favorable reputation sells them readily. Their High Quality satisfies the best trade.
For Sale at
Busy Stores

Their High Quality attracts the best trade.

They satisfy the most particular customer and bring him back to you.

The established re-sale price is maintained. This means a fair profit and protection against unfair competition.

At your Jobber's. If he won't supply you, write to the nearest address below.

E. C. Atkins & Co., Inc.

The Silver Steel Saw People

Home Office and Factory, - Indianapolis

Branches: Atlanta, Chicago, Memphis, Minneapolis, New Orleans, New York City, Portland, San Francisco, Seattle.

Canadian Factory: Hamilton, Ont.

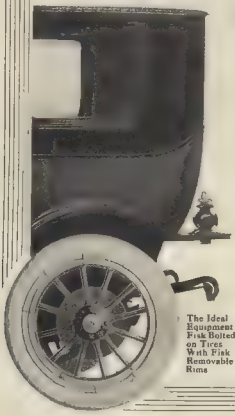
Fisk Tires

Apologies to a Car Builder

During the past few months we have made the words *"Inquire Among Fisk Tire Users Before You Buy Again,"* a part of our advertising. We admit the phrase may suggest "Ask the Man Who Owns One," but our intention is to meet a situation and not to imitate.

Fisk Tires are not occasionally good—they are always good. We would convince you not by a few testimonial letters but by referring you to any man who is using Fisk Equipment. Fisk Heavy Car Type Tires have a tough tread and strong fabric. If they are not overloaded and if the proper air pressure is maintained, they average a high mileage.

Reports of exceptional results from Fisk Equipment are received from every part of the country. Conditions are such that our best advertising comes from Fisk Tire Users.



The Ideal Equipment Fisk Bolted-on Tires With Fisk Removable Rims

Styles:—Clincher, Q.D. Clincher, Fisk-Dunlop, Fisk Bolted-on

Will You Inquire Before You Buy Again?

The Fisk Rubber Company

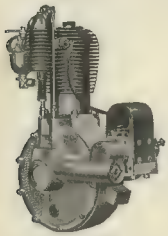
Dept. J. Chicopee Falls, Mass.

Direct Factory Branches in 30 Cities

A REVOLUTION IN MOTOR CYCLE MOTOR DESIGN

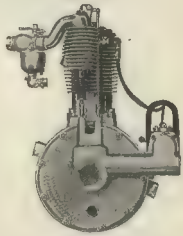
In bringing out our DE LUXE line of motor cycle motors, we have introduced a large number of improvements, and offer these motors as the most advanced now before the trade.

NOTEWORTHY IMPROVEMENTS.



One piece crank shaft.
One part crank case with cover
Improved Cam and Magneto Dgye.
Oil Tight Motor.
Large Valves
Simplified design throughout.
Reduced number of parts
Quiet running motor
Large Ball Bearings mounted in steel lined pockets.
Equipped with Bosch Magneto.

These improvements in design, together with the high grade materials used in construction, the modern methods of manufacturing applied, and the remarkable performance of these motors in road tests, mark a revolution in motor cycle motor building.



FOUR SIZES.

Four H. P. Single Cylinder Motor.
Five H. P. Single Cylinder Motor.
Seven H. P. Twin Cylinder Motor.
Nine H. P. Twin Cylinder Special.

PLAIN OR TWO SPEED MODELS
IMMEDIATE DELIVERY
CONTRACTS SOLICITED

PATENTS PENDING

THE F. W. SPACKE MACHINE CO.

INDIANAPOLIS, IND., U. S. A.

WE SHALL EXHIBIT AT THE MADISON SQUARE GARDEN, NEW

A REVOLUTION IN MOTOR CYCLE MOTOR DESIGN

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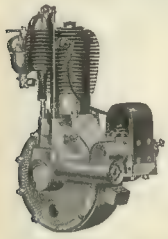

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One part crank case with cover.
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Oil Tight Motor
Large Valves
Simplified design throughout.
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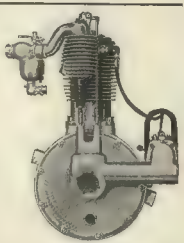

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Four H. P. Single Cylinder Motor.
Five H. P. Single Cylinder Motor.
Seven H. P. Twin Cylinder Motor.
Nine H. P. Twin Cylinder Motor.
(Special.)

PLAIN OR TWO SPEED MODELS
IMMEDIATE DELIVERY
CONTRACTS SOLICITED

THE F.W. SPACKE MACHINE CO.

INDIANAPOLIS, IND., U. S. A.

You'll have many calls for this Carburettor from now on

G&A G&A

The detail of design and construction of a G. & A. Carburettor which admits of its operating under all conditions without adjustment is shown in sectional view here—it is the ball cage to which the arrows point. These balls automatically open and close auxiliary air ports as the demand for changed mixture takes place. They do positively that work, which in other carburettors, a human hand must guess at.

The demand for G. & A. Carburettors is increasing daily. Our extensive advertising campaign to the consumer, of the merits of the G. & A. Carburettor, is bearing fruit.

We still have some good open territory in which we are looking for exceptionally good representation. Are you in line?

Remember that the G. & A. Carburettor costs no more than other high-grade instruments in spite of the fact that it has superior features to any carburettor manufactured. The G. & A. Carburettor is absolutely "adjustmentless." Regardless of speed, or temperature or conditions of the atmosphere, the G. & A. Carburettor is always in adjustment. This fact is rapidly making it the most popular carburettor in the field.

Get into the game early with us and share our success.

For further details write us.

G. & A. Carburettor Company

248 West 49th Street, New York City

Ride in a Glide Then Decide

Your Highest Motor Car Ideals Will Be Found in the Luxurious Glide

The *exacting* man is the man who gets just what he wants. He is the one who expects the greatest value for his money—the very best that can be purchased.

Most Glide owners are very exacting men, who have owned other motor cars, have run them and lived in them—and were not satisfied with results. They bought the Glide car because it embodied every one of their highest ideals of automobile construction—because after they had made it do its best and stand the strain of hardest work it *still* looked just as good to them as it did before they tried it out.

The Glide is not just simply a handsome, luxurious car. It is a "make good" car as well, with an almost unlimited amount of power and strength that will carry it over the roughest country and roads at falcon-like speed. It has rightly been termed "the car that couldn't be any better if its price was $4,000 instead of $2,000."

Glide owners say they'll never be contented with any other car, because it gives them all the pleasure of motoring that any car can, because it is strictly a high-grade product in every detail, because it is as beautiful and as graceful as even the high priced foreign make of cars, and, lastly, because they know its price is sufficient to get the finest quality and utmost efficiency out of a pleasure-giving vehicle.
Request our latest catalog on Glide cars.

The Bartholomew Company
210 Glide Street **Peoria, Illinois**

Glide

ETHYLIGHT LAMPS

These lamps burn alcohol vapor, and might be termed self-contained generator plants, each lamp being a complete unit in itself, without any outside connections. It is built of brass, except the valve stem and inner supporting rim. The valve stem is of monel material and non-corrosive. The inner supporting rim is of Russia iron. The shell or outer covering of the lamp is drawn from one piece of brass, is simple and free from useless and destructible fancy and ornamental attachments.

Ethylight Lamp.

The tank (within outer cover of lamp) for holding the alcohol is of drawn brass and no rivets are used in its construction It is tinned inside and out, and made in two sizes; the one for the seven inch lamp holding one pint of alcohol, and the other for the nine inch lamp holding one quart of alcohol. The nine inch lamp will burn for twenty-five hours with one filling. The burner consists of a coil for generating the vapor, a valve for controlling the flow, and an air intake and mixer tube

The alcohol is fed by air pressure, which may be obtained by any tire pump. The mantel is of special make, durable, and gives a powerful white light of about 80 c. p.

The lamp is made by the Ethylight Company, 1808 Broadway, New York City.

ENGLISH CAN OPENER

A novel device which has achieved popularity in England is the illustrated can opener, made by Brown Brothers, Limited,

Young's Can Opener.

22 Great Eastern Street, London, Eng. This is permanently fixed under the footboard of the car, and will hold the cap of an oil can, affording good leverage for unscrewing.

A YARD OF BATTERY SWITCHES

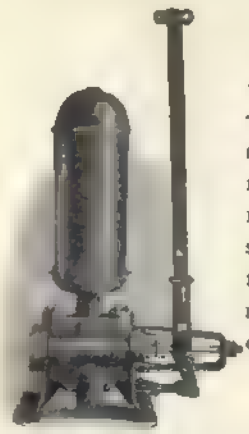
The accompanying view of Cutler-Hammer Battery Switches, made by Cutler-Hammer Manufacturing Company, Milwaukee, Wis., shows several newly developed features. It was early realized that switches that could be used singly or easily assembled in gangs with separate flush plates would be best for the jobber and dealer to handle. Formerly a pair of spacing strips were used with Cutler-Hammer Battery Switches to insure proper alignment, and plates single, two gang, three gang and four gang, provided separately. This made it possible to arrange combinations without carrying so large a stock, but a further improvement has been made in the style of front yoke or strap which is stamped in long strips. This can be cut with nippers or hack saw at top and bottom and separated as desired, doing away entirely with the spacing strips formerly used.

A new bus bar arrangement has been made at the rear, eliminating the need for running a wire across the backs of the several switches. Cupped brass washers have also been substituted which hold without solder any size stranded wire from No. 18 to No. 10 B. & S. Gage.

A yard of switches. In the lower part of the illustration is seen a strip of front yokes

GOULDS SPRAYERS
NOZZLES AND FITTINGS

ADMIRAL
MONARCH
POMONA
FRUITALL
EMPEROR
STANDARD
MISTRY
VERMORAL



VICE-ADMIRAL
TRIPLEX
PREMIER
BORDEAUX
HANDY
SENECA
IMPERIAL
LENOX
CYCLONE

PRACTICAL experience in selling Spray Pumps has proven to many dealers that it is not profitable to handle a cheap or unknown line. Goulds Sprayers have a world-wide reputation. They are easy sellers and always stay sold. There are some splendid opportunities open to the dealer who carries them in stock; he certainly has the advantage over the other fellow.

Write for Catalog and Prices.

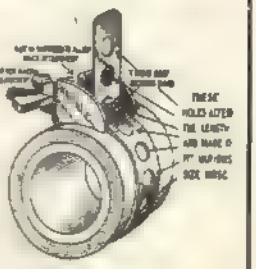
THE GOULDS MFG. COMPANY
SENECA FALLS, N. Y.

New York	Boston	Philadelphia	Charlotte
Jacksonville	Dallas	New Orleans	Pittsburg
St. Louis	Chicago	Spokane	Portland
San Francisco	Toronto	Los Angeles	Montreal

Morgan's Improved Hose Clamp

is the best to stock, as each number will fit several sizes of Hose hence reduction of stock

Can be used repeatedly Completely encircles Hose. Made in large number of sizes. Easily applied. Sells on sight and leaves good margin of profit.



SEND FOR CATALOG

B. MORGAN, Chapel St., Newport, R. I.

Hardware Store Business Methods

A book describing advanced and effective business methods, and full of practical suggestions, information and facts for *Merchants, Buyers, Salesmen Clerks* and *Accountants.*

227 Pages **One Dollar** Postpaid

DAVID WILLIAMS COMPANY
PUBLISHERS 14-16 PARK PLACE, NEW YORK

5
OF OUR
LEADING WHIPS

Blue Belton
Steel Hide
Grant's Vulcanite
Sirenia
Hector

We carry the largest stock and variety of Whips in the world.

U. S. WHIP COMPANY
WESTFIELD, MASS.

Deming Sprayers—Moneymakers for You

Here are three ways in which Deming Spray Pumps **really help you make money.** They are **profitable**—our prices leave you a good margin; they **sell readily,** enabling you to turn your money over frequently; they **please your trade**—wear well, work well, last well; in short, they stay sold, and are always a splendid recommendation for you, your store and your goods.

We are creating a lively demand for Deming Sprayers by demonstrating them at fairs, exhibits, etc., and by **persistent advertising**—pages and quarter pages in "*Fruit Grower*," quarter pages in "*Green's Fruit Grower*," "*Better Fruit*," and other leading fruit publications, and a liberal series of smaller spaces—**two- to eight-inch ads—in a dozen or so of the best farm papers.**

This is a carefully-planned campaign and is reaching thousands of the best people of the country—the folks **you** want to do business with. More than ever before your customers want

DEMING SPRAY PUMPS

and we're ready to help you supply that demand in the best possible way. Here are some features that are making Deming Outfits popular with your trade and are making it easier for you to make money with them:—

Substantial Construction Ease of Operation Durability High Pressure Developed

WE WILL HELP YOU SELL DEMING SPRAY PUMPS

Your customers are doing their early spraying now, but many haven't yet bought new outfits—so you can still sell some Deming Sprayers if you act at once. Drop us a line **now** for our plan and special proposition to dealers, and we'll do our part as fast as the mails will let us! **Address Desk 4,**

THE DEMING COMPANY Manufacturers of Pumps for All Uses **SALEM, OHIO**

General Western Agents: HENION & HUBBELL, Chicago. Other Agencies: Harris Pump & Supply Co., Pittsburg. W. P. Dullett, 49 N. Seventh Street, Philadelphia. Ralph B. Carter Co., 50 Church Street, New York. Charles J. Jager Co., Boston. Sydnor Pump & Well Co., Richmond, Va. Other Agencies in Principal Cities.

Store Ladders

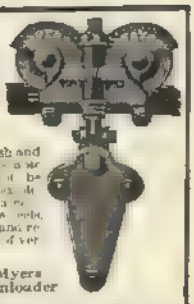
Noiseless Cushion Tips. Best and most complete line on earth. Permanent [illegible] Cloth handles for [illegible]. Write for descriptive circulars and prices.

"Take Off Your Hat to The Myers!"

Handle the most satisfactory line of single and double acting hand and wind mill force and lift well pumps, house pumps, tank pumps, hydrant pumps, power and power pumps, hay unloading tools, hay rack clamps, stay on door hangers, etc.

MYERS

Tandem Adjustable Barn Door Hangers



Easy to push and pull [illegible] per cent and more of [illegible] be kept on the track [illegible] Most vital [illegible] track of double [illegible] Have the great feature of ever [illegible]

The Myers Hay Unloader

With large [illegible] runs on [illegible] steel axles. Has [illegible] Made of malleable and angle steel. [illegible] track. We [illegible] complete line of [illegible] unloaders, slings, hay forks, hay pulleys, etc.

The dealer who handles the Myers Pumps, Hay Unloading Tools, Barn Door Hangers, etc., has something to sell.

F. E. MYERS & BRO. :: ASHLAND, OHIO

STAR POINTER PUMPS

DON'T USE SMALL CYLINDERS USE BIG ONES

Get Our New Catalog

Star Pointer Pump & Sprayer Co.

218 NO. JEFFERSON STREET CHICAGO

FORCE THE WATER NOT YOURSELF AT THE HANDLE—

Spray Pattern Sprinklers

Also four sizes of **Whirling Lawn Sprinklers**

Send for Catalogue

Edward S. Hotchkiss

Railroad Avenue

BRIDGEPORT, CONN.

DUPLEX TRADE RE-IN FORCED MARK CHAIN

Duplex Chain Is Different

It is re-inforced at its hitherto weakest point. It will not kink, greatest possible strength with minimum weight of metal. Cost no more than other kinds.

THE HATHEWAY MFG. COMPANY

BRIDGEPORT, CONN.

Grabowsky Four Cylinder Truck

Has Been Stamped

The Pinnacle of Motor Wagon Achievements

Our exclusive features which have proven such a force, owing to their time and money-saving qualifications, are incorporated in our new design. In addition to which, in keeping with Grabowsky advanced ideas of construction, are new and approved features.

One to Five Ton Capacity

Cars built to meet every commercial requirement.
Send for descriptive literature.

Largest Motor Truck Order Ever Placed!

For weeks the New York Department Store firm J. L. Keener Co., investigated the various makes of motor trucks—which investigation resulted in a decision in favor of "The Grabowsky." With the order for 43 trucks came the information—"The Grabowsky won strictly on the merits of its construction."

We claim and can prove that "Grabowsky" stands for highest motor truck attainment. "Grabowsky" means maximum delivery service at minimum cost—all due to our time and money saving features—A Removable Power Plant that slides out like a drawer—ready for inspection or adjustment at all times without holding up the car in service—Quadrupling efficiency—Hardened Steel Bushings which protect all working connections, meaning a saving of hundreds of dollars yearly.

THESE AND MANY OTHER FEATURES WHICH NO OTHER CAR HAS—NOR CAN HAVE guarantee "The Grabowsky" to cost less for up-keep—give better service—and last longer than any other truck on the market.

We Invite Investigation!

"We have had a Grabowsky in use nearly two years and it has been on the job every day. We drive several motor trucks of different makes and must say none of them are up to The Grabowsky—which has the power and strength in make up required to maintain daily service. The cost too is less." JOHN HEITSHUH'S SONS

"Our Grabowsky has never missed a minute's time. It replaces from three to four wagons. In our opinion your trucks are the very best on the market. Ours does everything we plan for it, and lives up to your promise of "Guaranteed Service." JOS. WOTTZ & SON.

"Since purchasing our Grabowsky it has been in constant daily service—loaded to its full capacity and often overloaded—covering approximately 50 miles per day through the hardest grades in San Francisco. It has replaced three double wagons. Entire running expense has averaged $27 50 per month. Considering the amounts of work this truck accomplished it is little short of marvelous." ITALIAN SWISS COLONY.

Write Us Today!

Grabowsky Power Wagon Co.

1725 ST. ELLIOT AVE., DETROIT, MICH.

"We Guarantee Service"

"We Guarantee Service"

Grabowsky Four Cylinder Truck

Has Been Stamped

The Pinnacle of Motor Wagon Achievements

Grabowsky Power Plant Slides Out Like a Drawer—

That's Accessibility!

Entire Power Plant quickly placed at one's finger tips—ready for inspection or adjustment at all times, without holding up the car in service—Thus efficiency is quadrupled. This feature of perfect accessibility is of vital importance, as inaccessibility results in neglect. Neglect means heavy unnecessary expenditure—early and rapid depreciation—loss of operating efficiency,—we claim and can prove.

Our Removable Power Plant Is a Money Saver! ——— A Time Saver!

Every means provided to lessen the cost of repairs, increases the value of a mechanical product to the owner. All working connections on "The Grabowsky" are protected with Hardened Steel Bushings which take up the wear. To replace the entire number when worn from normal use—costs only several dollars. Similar replacements on any other truck would cost several hundred dollars. This feature also prolongs the life of the car.

Our lubricating system is another great lesson in economy. About a pint of oil is fed the motor every three minutes—reclaimed and refiltered and used over and over again, making it more economical and efficient than that of any other make.

Aside from engineering skill—(time and money-saving features which no other car has nor can have) the utmost care is exercised to the minutest detail of construction. Material, treatment of same,—expert workmanship, thorough inspection at every stage of manufacture—so that when you invest in a Grabowsky you buy a truck that is commercially correct—You buy service!—You buy economy!

One to Five Ton Capacity

cars built to meet every commercial requirement—Send for descriptive literature.

Agency territory available for business men of standing.

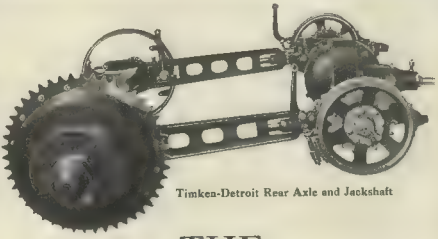
We invite investigation **Write us today**

Grabowsky Power Wagon Co.

1758 MT. ELLIOT AVE
DETROIT, MICH.

"We Guarantee Service"

"We Guarantee Service"



Timken-Detroit Rear Axle and Jackshaft

THE 1912 Timken Equipment

For Commercial Trucks

Marks a big forward stride by The Timken-Detroit Axle Company, and Timken has always been the leader in truck axle development.

Contracts have already been closed with many of the leading motor truck manufacturers. Responsible parties who are interested in producing the "make good" kind of trucks should write the Timken Engineering Department for blue prints, specifications and sizes.

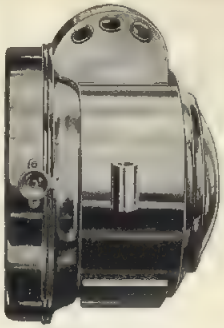
The Timken-Detroit Axle Company
DETROIT, MICHIGAN, U. S. A.

The only axle manufacturer licensed to make axles equipped with the famous Timken Roller Bearings.

GRAY & DAVIS

GRAY & DAVIS CLOSE-COUPLED LAMP

STYLES FOR 1911



Design Patent Applied for
Styles Nos. 106, 107, 108

Quality First Last and Always

GRAY & DAVIS OIL SIDE LAMP

No. 104

Shown with Electric attachment "C"
Size body . . 4¼ in. x 4¾ in.
Price, each **$5.50**
With Electric attachment "C" extra **$1.50**
Our latest type tubular cold blast oil lamp, suitable for large or medium size cars.

GRAY & DAVIS OIL SIDE LAMP

No. 103

Size body . . 4¼ in. x 4½ in.
Price, each **$4.50**
Our new small square lamp, a little beauty and suitable for medium and small cars.

GRAY & DAVIS TUBULAR OIL TAIL LAMP

Style No. 15

For use on medium size cars.
Price, each **$3.25**
Diameter of Flange . **4½** in.
Extreme Length . . **5¾** in.
Extreme Height . . **9¼** in.
Our most popular tail lamp.

New catalog ready showing complete line. Send for it.

GRAY & DAVIS, AMESBURY MASSACHUSETTS

"The Two Wizards"

THOMAS A. EDISON
Inventor of the Famous Edison Battery

—AND—

EMIL GRUENFELDT
Designer of the Baker Electric

The Baker is the first electric car to accomplish the double century on one charge of batteries.

244.5 Miles Made by the Baker on a Single Charge

This mileage record for electrics was recently made by a Stock Baker Victoria with standard equipment of Edison batteries. The distance covered was 244.5 miles over **average roads** at a speed of 12.65 miles per hour under official observation.

The Baker Goes Farther

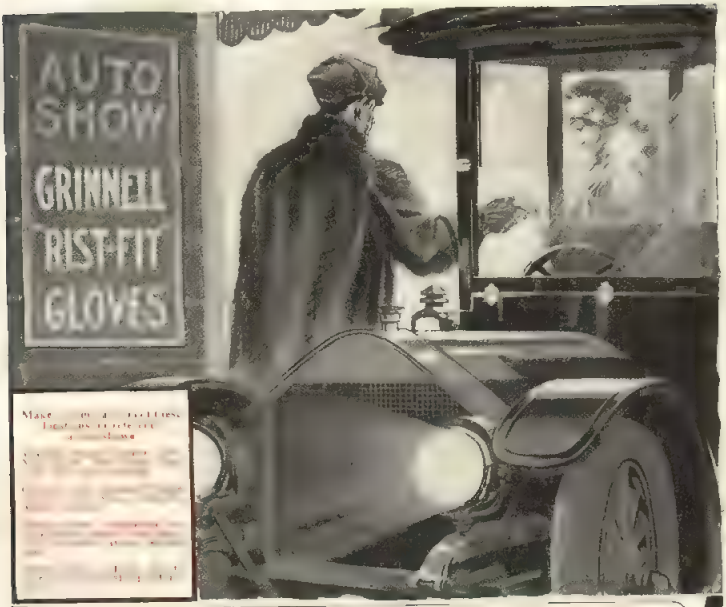
than any other electric simply because its motor develops more power with the same "draw" and its shaft drive delivers that power to the rear axle with less friction than any chain drive invented. No other shaft drive can approach the Baker transmission in saving of power when the car starts, quickens speed or climbs a hill.

Live Dealers Wanted Wherever the Baker is Not Now Represented.
For Dealer Proposition, address

THE BAKER MOTOR VEHICLE COMPANY

Largest and Oldest Manufacturers of Electric Vehicles in the World

35 West Eightieth Street, - Cleveland, Ohio



At the AUTO SHOWS

BE SURE TO INSPECT

Grinnell Auto Gloves

See how classy and splendidly made they are! Try them on. See what a convenience our patented **"Rist-Fit"** really is! See how warm and distinctive our styles for winter are! Note in our summer style the **Ventilated Back**, which insures cool hands in hottest weather.

Then, if you're a motorist, you'll surely want **GRINNELL'S, next pair you buy.**

And if you're a dealer, it will pay you to leave a trial order. Get in line to get the local profit out of this best known, best advertised, most salable line of auto gloves.

If you're not planning to visit the shows, write at once for samples and our big portfolio of 1911 selling plans for our dealers.

MORRISON-RICKER MFG. COMPANY

70 Broad Street, Grinnell, Ia

Originators and Patentees Ventilated and "Rist-Fit" Gloves

W. F. S. MOTOR CARS :: *1911 Models*

Four Cylinder, 20-25 Horse Power. Bore, 4⅛"; Stroke, 5¼"

Five-Passenger Touring Car **$2250**
(With Fore-Door and Oil Lamps only.)
Runabout, with Rumble Seat . . . **$2150**
Five-Passenger Limousine **$3200**
Torpedo Type Runabout **$2200**
(With Beetle Back and Folding Rumble Seat)
Four-Passenger Gunboat Tourabout . **$2300**

The W. F. S. is unquestionably the greatest value offered to-day, being built throughout of the highest grade material.

The W. F. S. is for those who demand a superior car—a car that combines **power, simplicity, style** and **economy.** It has no superior at any price.

We invite correspondence from agents whose clientele demand a car of the **highest grade.**

THE W. F. S. MOTOR CAR CO. : 4224 Ludlow St., Philadelphia, Pa.

ESTABLISHED 1883.
CABLE ADDRESS "DRESTEEL."
PHONES—1900, 1901.

WE SPECIALIZE IN MAKING HIGHEST QUALITY

AUTOMOBILE PARTS

FROM PRESSED STEEL, BRASS, BRONZE, ALUMINUM AND THE NEW STEEL ALLOYS

Chicago Office—1243 Peoples Gas Building. Detroit Office—1417 Ford Building

WORCESTER PRESSED STEEL COMPANY
WORCESTER, MASSACHUSETTS

THE GUS BALZER CO.

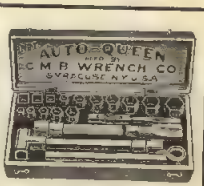
1777-79 Broadway, Dept. F
IN THE CITY OF NEW YORK

Write for New, Artistic Catalogue, Showing Beautiful
LIMOUSINE BOUQUET HOLDERS

STEVENS IGNITER, ONLY $20.00
Including Combined Timer and Distributer, Switch and Coil
STEVENS CARBURETOR, ONLY $7.50

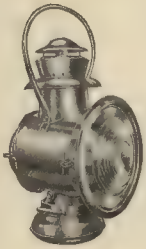
Monograms and Trade Names, Adjustable Side Mirror
Tire Air Tank, "Air-on-Tap"
License Plates and Holders, and Other Accessories

"SILVER KING"
"AUTO QUEEN"



It has something that buyers know is a real advantage, something that lifts it out of a class it would otherwise be in, and lucky is the jobber who sees it first. You need the adjustable handle on "SILVER KING" to get at the difficult places around machinery. "AUTO QUEEN" is something new and sold for much less money. Write for prices and electros to use in your catalogue.

Manufactured by **C-M-B WRENCH CO., Industrial Bldg., Syracuse, N. Y.**



HAM'S TOURIST

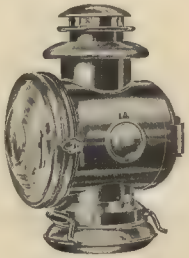
Manufacturers who are especially particular about their equipment are choosing

Ham's Cold Blast Automobile Lamps

Don't you think that they are worth your consideration ?

HAM'S RELIANCE

Beautiful designs in Round and Square Body side and tail lamps Equipped to burn oil, gas and electricity.
And They Stay Lit



HAMROC (Cold Blast) Motorcycle Lamp
Combination Oil and Gas

All the advantages of three lamps in one
Write for Motorcycle lamp booklet

Ham's Lamps cost no more than inferior goods and are worth twice as much. They are a valuable asset to any car, add to the beauty and give real actual service.

More than can be said of most lamps
GET OUR CATALOG

More than can be said of most lamps
GET OUR CATALOG

HAM'S VENUS
Cold Blast Tail Lamp

The GUIDE, illustrated herewith, is one of our new creations. We are quoting interesting prices and have a good proposition to offer. Let us hear from you.

Also look for us at the Chicago Show, Coliseum Gallery, Space 4.

C. T. Ham Mfg. Co.
ROCHESTER, N. Y.

HAM'S GUIDE
Cold Blast Tail Lamp

JUST INSIST ON IT

HAM'S TOURIST

Tell your dealer you want

Ham's Cold Blast Lamps

on your 1911 car

The quality lamps that add tone to the car and give satisfaction to the user.

HAMLIGHT

They are made right, and of the right material. They produce an immense light, are always ready and always reliable, regardless of the weather. If you want lamp satisfaction, get our catalog.

C. T. HAM MANUFACTURING CO.

ROCHESTER, N. Y.

High Grade Beaver Motors

Work Like Beavers—Silent, Sure, Satisfactory

6 Cylinder Vertical 4¾ x 5½

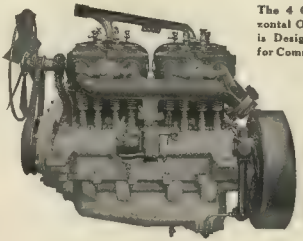
4 Cylinder Vertical 3¾ x 4½ and 4¾ x 4½ and 4¾ x 5½

2 Cylinder Horizontal Opposed 4¾ x 4, 4¾ x 4 and 5½ x 4½

4 Cylinder Horizontal Opposed 4¾ x 4½

Constant Level Splash Oiling System

All Motors are Four Cycle



The 4 Cylinder Horizontal Opposed Motor is Designed Specially for Commercial Trucks

Write for FREE Booklet

Beaver Mfg. Co., 783 Chase St., Milwaukee, Wis.

(THE FILER-STOWELL CO., OWNERS)

The WARREN SYSTEM

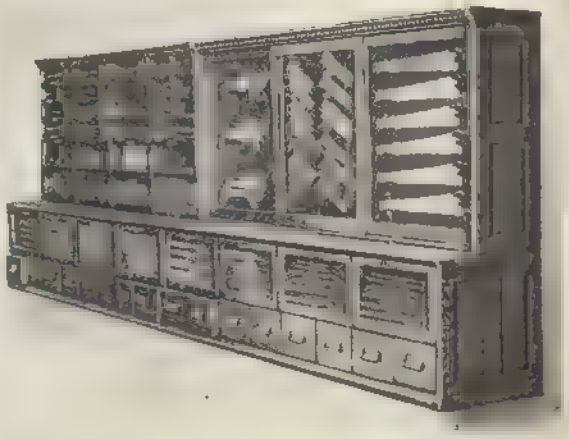
of

HARDWARE STORE FIXTURES

THE KEY TO SUCCESS THAT FITS EVERY HARDWARE STORE

The only Fixtures that Correctly Classify, Display and Protect the Entire Stock saving the Merchant's time and money and increasing his sales and profits year after year

Illustrated in Catalog 165



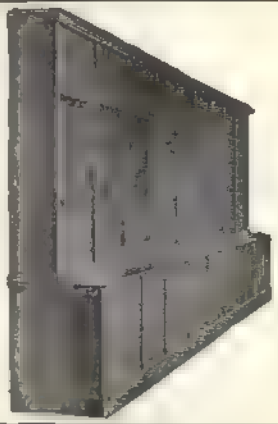
J. D. WARREN MFG. CO.
Fifth Floor—Masonic Temple
Chicago, U. S. A.

The Model Six Auto Ladder

Allows the fullest adjustment. This requires no floor track but runs on flat wheels (iron or rubber). Can be set out at any angle or shoved close to shelving.

See this space for other kinds next week or send for booklet telling all about Rolling Ladders.

The Bicycle Step Ladder Co.,
62 Randolph St., Chicago



THE BEST
Hardware Shelving
IN THE WORLD
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W. C. Heller & Co.
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BRANCH
220 Wyandotte Street
KANSAS CITY, MO.

EASY-ROLLING

IF YOU WANT TO KNOW ALL ABOUT THE BEST
SHELF LADDER
SEND FOR OUR CATALOG TO-DAY
MORLEY BROTHERS,
SAGINAW,
79 Washington Ave. MICH.

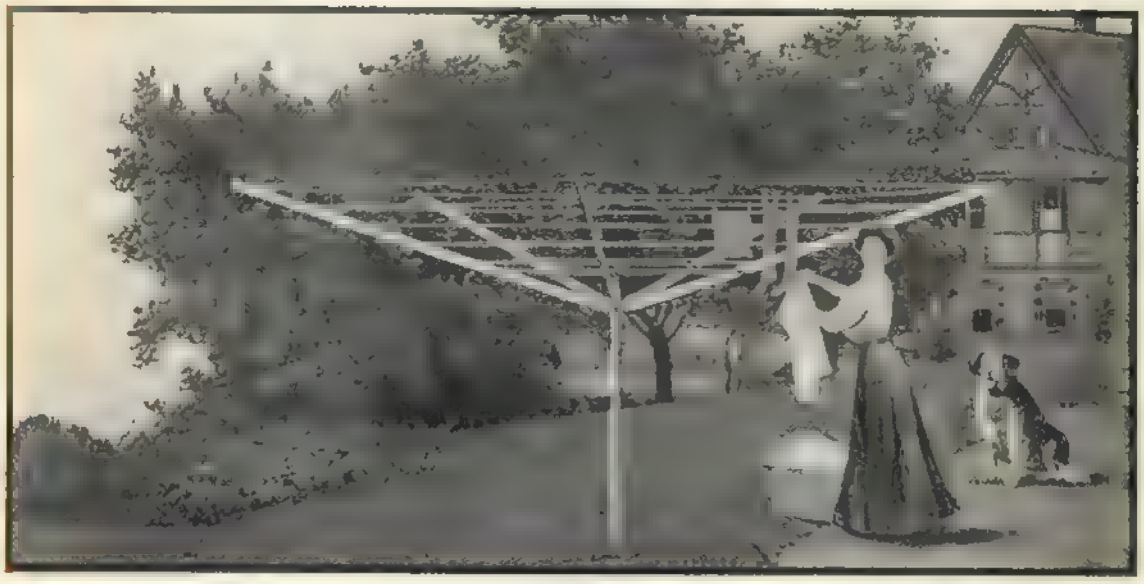
The MILBRADT Rolling Ladders

¶ Have been long and favorably known to the trade for their convenience and satisfactory service. ¶ They are always shipped on approval. Catalogue showing many new styles is ready for you

—WRITE TODAY—

Milbradt Mfg. Company
1444 N. Eighth St., St. Louis, Mo.

HIL



Lawn Clothes Dryer

There are nearly one million of these Dryers in use and not one dissatisfied purchaser.

And why should there be any dissatisfaction shown when these Dryers have meant so much to householders? They've withstood every kind of test which a device of this nature would be subjected to. They've shown the way to actual convenience in the handling of clothes. They've eliminated thousands of unsightly clothes yards. Lessened much of the drudgery of wash day. Saved clothes from getting dirty. Saved wet feet—lifting of heavy clothes baskets—the tearing of clothes—in short, they've proven a blessing to women who have experienced the evils attendant upon wash day before these Dryers were sold.

Householders will look to you for Hill's Lawn Clothes Dryers. There's no substitute for this device.

A device which is practical in design—thorough and strong in construction—appears to advantage. One that is durable and will withstand hard use and abuse is bound to advertise itself. And that's just what this Dryer has done—advertised itself, and today it has the call because it's known.

We will be glad to quote prices and offer selling helps. Why not drop us a line?

A Partial List of Distributors of Hill's Famous Clothes Dryers

Buffalo—The Republic Metalware Co.
Chicago—Hibbard, Spencer, Bartlett & Co.; The Republic Metalware Co.
Cleveland, O.—The Geo. Worthington Co.
Milwaukee, Wis.—Wm. Frankfurth Hdwe. Co.
Minneapolis, Minn.—Janney, Semple, Hill & Co.
New Haven, Ct.—The Bronson & Townsend Co.
New York City—The Republic Metalware Co.
Philadelphia—The Biddle Hardware Co.
Portland, Ore.—Waterhouse & Price Co.
San Francisco—Waterhouse & Price Co.
Seattle, Wash.—Waterhouse & Price Co.

Hill Dryer Co., 316 Park

HAVOLINE OIL

ALL GARAGES

ALL DEALERS

And at all Distributing Stations of the Indian Refining Co

For Automobile Lubrication

Now as Ever the Premier Lubricant. Supreme O'er Land, Air and Sea. Every test marks Havoline the best. Subjected to a highly specialized process of filtration it is freed from Carbon to the greatest possible extent.

That's why Havoline Oil—while possessing the same lubricating body as other oils—light, medium and heavy—LUBRICATES BETTER—BURNS UP CLEANER. **That's why**

"It Makes a Difference"

And that's why Havoline Oils are used and recommended by many of the leading Automobile Manufacturers, and by an ever increasing number of individual car owners.

HAVOLINE OIL COMPANY

Main Office: 17 Battery Place, New York City

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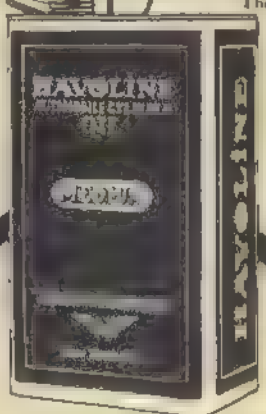


Our Booklet, "The Commonsense of Automobile Lubrication" is yours for the asking

VICTORY

for

Timken Roller Bearings

The MARMON car, winner of the

500 Mile International Sweepstake

at Indianapolis was equipped with

Timken Roller Bearings

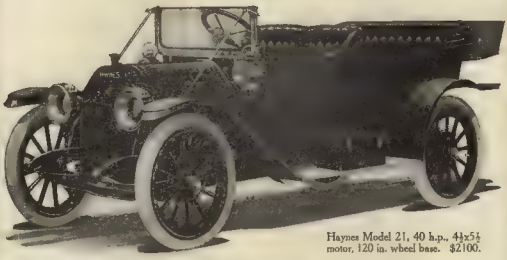
in the front wheels, the point of severest service. Rear axle differential carrier was also mounted on

Timken Roller Bearings

THE
TIMKEN ROLLER BEARING CO.
Canton, Ohio

The HAYNES

FOR 1912 OFFERS THE DEALER A SPLENDID LINE



Haynes Model 21, 40 h.p., 4½x5½ motor, 120 in. wheel base. $2100.

The response of public and trade alike to our announcement of the 1912 Haynes models has been beyond all expectations.

WITHIN twenty-four hours after the firing of our first big gun for 1912—the full-page announcement in Saturday Evening Post, Collier's, Everybody's, McClure's, Munsey's and other big publications—dealers in all parts of the country had wired in orders for demonstrating cars, and the mails were bringing us bundles—literally bundles—of letters calling for the Haynes 1912 catalog.

Then when our announcement to the trade appeared in this and other publications, the activity among dealers reached a point which we had not anticipated at all.

Just stop a minute to think what this means. The fire which completely destroyed our old factory last February practically put the Haynes car out of the market for seven months. In temporary shops we had been able, during that period, to make very few cars—not one-tenth enough cars to fill orders booked **before** the fire. And during those same months other manufacturers were going to the public and to the trade day after day, month in and month out, with their advertising, with their salesmen and with their announcements of new models, while **we** were at a standstill.

Last month, when our magnificent new factory had risen from the ashes of our old one, when its wonderful modern equipment had been installed and our first 1912 model had been built and tested and **proven** to be the **best** of all the splendid Haynes models ever built, **then** we came back into the market. It was a glorious return, and a royal welcome.

We hadn't realized it but the public was **waiting** for the new **Haynes.**

The 1912 Haynes—two chasses. Model 21, 40 h.p., 4½x5½ motor, 120-inch wheel base, and Model Y, 50-60 h.p., 5x5½ motor, 127½-inch wheel base, with eight types of body, selling at $2100 to $3900—is truly a superb, high-power car, and built into it are **eighteen years of Haynes experience and skill.**

There is a live demand for Haynes quality of design and construction at Haynes prices, and Haynes dealers will supply this demand. Our first 1912 demonstrators are leaving the factory this week. Write us today, or wire, and if we can take care of you on an agency connection we will advise you at once. Address

HAYNES AUTOMOBILE COMPANY

DEPARTMENT S **KOKOMO, INDIANA**

GRAY MUFFLER CUT-OUT

Simply cut a Notch in EXHAUST PIPE and clamp cut-out overit. Made for all sizes of iron or steel pipe.

PRICE

For 1⅛ in. and 1¼ in. steel or 1 in. iron.....$1.50
For 1¼ in. and 1½ in. steel or 1¼ in. iron..... 1.65
For 1½ in., 2 in. 2¼ and 2½ in. steel or 1½ iron. 1.75
For 2⅜ in. and 2½ in. steel or 2 in. iron..... 2.00
For 2½ in. and 2¾ in. steel 2.25
For 2¾ in. and 3 in. steel..... 2.50

Gray Lock Push Pedal
Simplicity Itself

Price . . . $1.00
Without Lock . .85

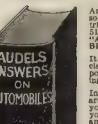
Ask for Catalog No. 12

GRAY-HAWLEY MFG. CO.
937 E. Jefferson Ave.
Detroit : Michigan

Motor Car and Motor Boat Accessories

AUTO ANSWERS

FREE FOR EXAMINATION



Price, $1.50

Are you interested in automobiles? If so, let us send you on seven days' free trial — without deposit — this big, new 512 page illustrated manual, entitled "AUDELS ANSWERS ON AUTOMOBILES."

It is impossible to get the greatest efficiency out of a car until you know every point in running, caring for and adjusting the machine.

In this new book just the problems you are up against are solved in a way that you can easily understand, and so that you can immediately turn to your car and apply the knowledge.

We don't want you to take our word, or anyone else's for it. We are willing to send you the book without deposit. Use it seven days in connection with your car. Then send back the book or remit $1.50. Could anything be fairer?

Cut out and fill in your name and address plainly at the bottom, place it in an envelope and mail. Your copy of "AUDELS ANSWERS ON AUTOMOBILES" will reach you by return post, prepaid.

Theo. Audel & Co., 63 Fifth Ave., New York

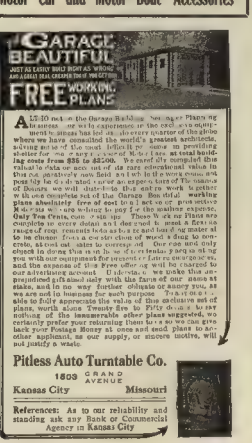
Kindly mail me copy of Audels Answers on Automobiles, and, if found satisfactory, I will immediately remit you $1.50, or return the book to you.

NAME.....

OCCUPATION.....

ADDRESS.....

Jour. Trade J

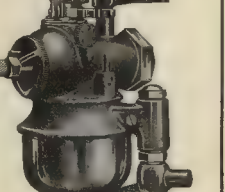


A 15-10 note on the Garage Building question. Planning and designing are with experience in the cost and requirements, since has led us to every quarter of the globe where we have consulted the world's greatest architects, solving some of the most difficult problems in providing shelter for motor cars—some of which have attained building costs from $35 to $2500. We create and compiled this Valuable data or accurate of the rare educational value in that we positively now field and tech in the work come and positively to do what we are experts of The success of Donors we will distribute the entire work together with our complete set of The Garage Beautiful working plans absolutely free of cost to all sent on our prospective Readers who care without to pay for the author expense. Only Ten Cents, coin or stamps. These Work or Plans are complete in every detail and are used to meet a flexible range of requirements to be set to and local or matter of to be chosen from a selection of wood a shop to concrete, at cost cut-rates to correspond. Our cost and only object in doing this is to let us of our plans personally acquaint you with our equipment for prospective customers, and the success of this Free offer we will be charged to our advertising account. Understand, we make this unprecedented gift stand only with the favor of our name at stake, and in no way further obligate or annoy you, as we are not in business for such purpose. To enable you to fully appreciate the value of this exclusive set of plans, worth alone Twenty five to Fifty Dollars, to say nothing of the innumerable other plans suggested, we certainly prefer your returning them to us so we can give back your Postage Money at once and send plans to another applicant, as our supply, or sincere motive, will not justify a waste.

Pitless Auto Turntable Co.
1809 GRAND AVENUE
Kansas City Missouri

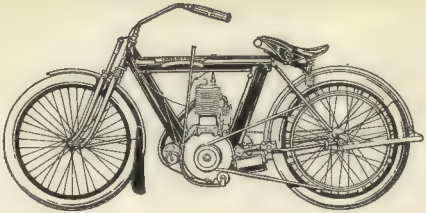
References: As to our reliability and standing ask any Bank or Commercial Agency in Kansas City

HEITGER CARBURETERS
For Motorcycles



Gives minimum and maximum speeds, one setting. Gives 4 to 75 miles per hour according to size engine, from 75 to 100 miles per gallon.

HEITGER CARBURETER COMPANY
1150 Beecher Street INDIANAPOLIS, IND.



There is only one motorcycle that has gone through the season of 1911 without scar or blemish. It is the

Made in two unequaled—unbeatable models—

PIERCE SINGLE CYLINDER and FOUR CYLINDER

Prepare for 1912 by getting the Pierce agency now. Ask for new Catalogue E.

THE PIERCE CYCLE CO. - BUFFALO, N. Y.

Pacific Coast Branch, Oakland, Cal.

Manufacturers of Pierce Bicycles which hold all speed records. Kramer, 11 Times Professional Champion, rides the Pierce exclusively.

OUT IN TERRE HAUTE

THE INDIAN

FINISHED 1-2-3

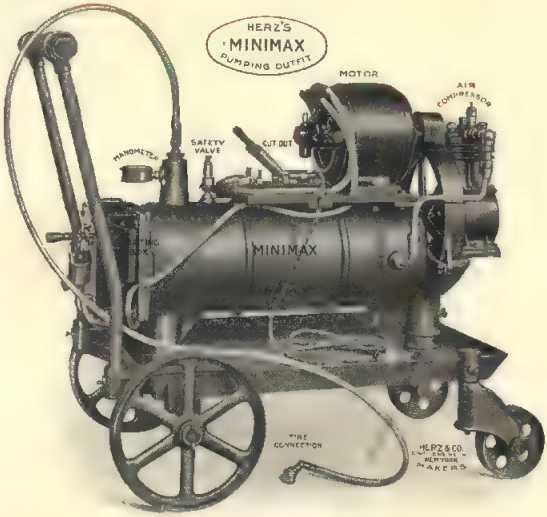
IN A 100 MILE RACE

That is only one race. But if you look back over the records you will find The Indian has **Won 99% of ALL of the Hundred Mile Races ever run.** Such continuous and unusual success proves it an unusual machine. More Powerful, Efficient and Dependable than all others. Free Illustrated Catalogue P tells all about it.

THE HENDEE MFG. CO. :: Springfield, Mass.

CHICAGO SAN FRANCISCO LONDON

HERZ'S GARAGE PUMP



Total Height, 27 in., Length, 35 in.; W[illegible] 40 lbs. Double Cylinder Air Co[illegible]
Piston R[illegible] h Lu[illegible]

It does away with those expensive to install and more expensive to run stationary pipe lines

To run the Minimax costs practically nothing. Made for any kind of current

Just Wheel It Where It's Needed and Connect to Nearest Lamp Socket.
The Tank Will Hold Enough Air to Inflate Four Tires Outside of the Garage.

150 Pounds in Three Minutes

BE MODERN! SAVE MONEY! SAVE TIME!

Write Us Now. See Us at New York or Chicago Show

HERZ & CO., Civil Engineers **Puck Building, New York**

Herz Plug

"BOUGIE MERCEDES"

Herz Plug is the only one positively guaranteed for one year. As a matter of fact, it will **stand up,** under any and all conditions, from twice to three times that long. It's Double Stone.

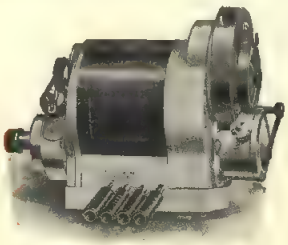
It is not affected by oil or soot, requires no cleaning and need never be taken out of the motor. It has two to four electrodes of Platinum-Alloy, which take care of any voltage, from the lowest to the highest magneto tension, and which will not burn away.

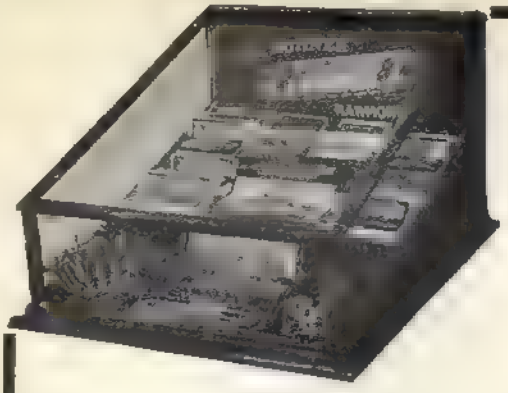
Since 1894, Herz Plug has been acknowledged to be the best plug made in either Europe or America.

Herz Magneto can be relied upon, day in day out, for a fat, hot spark. With the Herz Plugs it forms the ideal ignition system. It is made in every size and style to meet every possible requirement, from that of the highest powered automobile to that of the smallest motorcycle. Made in Germany.

HERZ & CO., 295 Lafayette St., New York

Herz Magneto





DO YOU WANT THIS SHOW-CASE TOGETHER WITH 50% CASH PROFIT?

Even though this Show-Case is worth more than $12.00, it doesn't cost you a penny when you purchase our No. 300 Assortment. This Show-Case is sold with a special selection of 16 different styles of the very best selling

Hohner Harmonicas

in all keys and costs $30.00. The sale of the Harmonicas nets you a cash profit of 50% on your investment. You then have the display case absolutely free of cost. The Show-Case measures 20¼ inches wide by 24¼ inches long and 14 inches high. It is made of the very best quarter-sawed oak having the finest antique finish, extra double thick glass, spring hinged door with two panels, sloping top, and fitted with a substantial display partition which exhibits the Harmonicas advantageously. The Show-Case is elegantly and durably constructed and cannot be surpassed.

Our latest catalogue will explain more clearly how you can obtain this elegant Show-Case for nothing and, besides, it will tell you of other equally good propositions. Write for it at once. We will send a copy to any merchant postpaid.

M. HOHNER, 114-116 East 16th St., NEW YORK CITY

CANADIAN OFFICE, No. 76 York St., Toronto. MEXICAN OFFICE, Apartado Postal No. 851, Mexico, D. F.

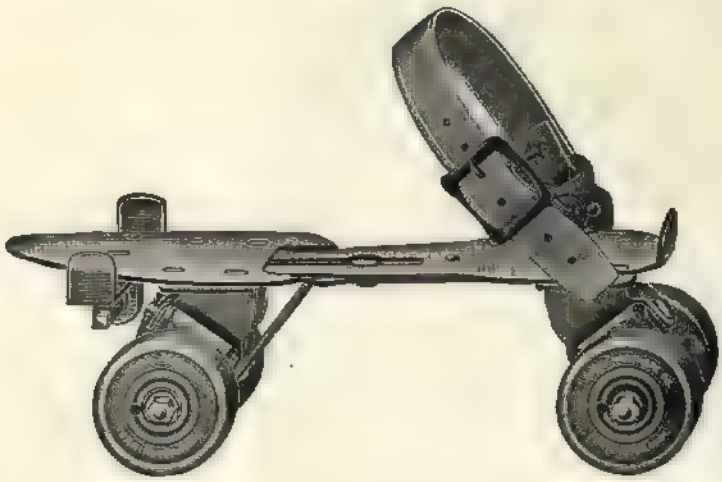
To Avoid Confusion, Please Mention IRON AGE-HARDWARE

When Writing to Advertisers

Some of our subscribers are still referring to this paper in their correspondence as "The Iron Age." Though both papers are published by the same company, it is desirable that each should have the credit for the results which it produces. As most of our readers know, "The Iron Age" has been confining its attention, for more than a year past, to the iron, steel, metal and machinery trades, being primarily the manufacturers' paper; while "Iron Age-Hardware" is published in the interest of hardware merchants and is primarily the retailers' paper. Subscribers for "Iron Age-Hardware" will, therefore, confer a special favor, on both publisher and advertiser, by using the full name of this journal when writing to its advertisers.

IRON AGE-HARDWARE 14-18 Park Place, New York

ICE
ROLLER **SKATES** ALL
STYLES



UNION HARDWARE CO.

TORRINGTON, CONN.

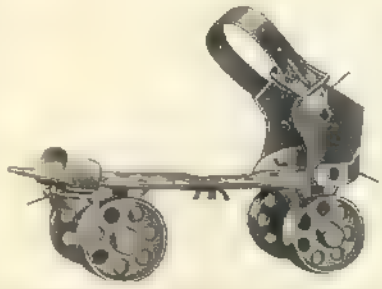
NEW YORK OFFICE: 95 Chambers St.

Nasco Skate Carries Weight

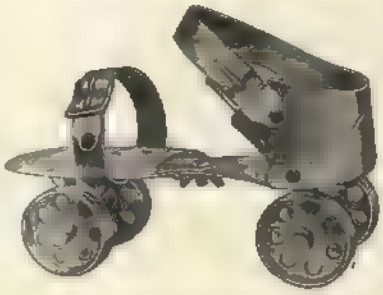
KING, Truss Bridge and Ball Bearing

BEST MATERIAL
HIGHEST WORKMANSHIP
PRICES RIGHT
THE PERFECT SKATE

Truss Bridge Plain Bearing



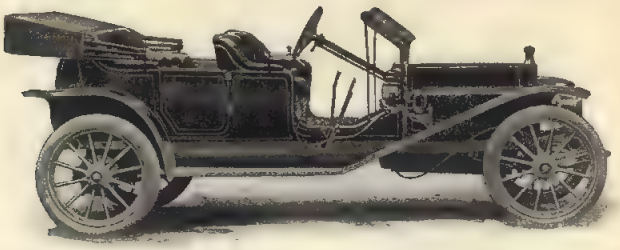
Equipped with CLAMPS THAT CANNOT BE LOST and Clips that protect the Buckle and Leather. THE TRUSS BRIDGE MAKES THE NASCO rigid at any extended point and sustains an enormous weight by giving special strength to the weakest part of an extension skate.



Before ordering get our catalogue and prices.

NATIONAL ARMS & STAMPING CO., 215 North Second St. PHILADELPHIA, PA.

It's here—in first cost and after cost, the most economical car in the world



20 H. P.—4 cylinders—4 passenger—sliding gears—Bosch magneto—110 in. wheelbase

Price, F. O. B. Detroit, including gas lamps, piping and generator, 31 x 3½ in rear tires shock absorbers in front; three oil lamps, tools and horn as regular equipment.
Top, windshield and speedometer extra.

$900 Touring Car — **Hupmobile** — **$900 Touring Car**

GUARANTEED FOR LIFE

Are you one of those who have felt that a touring car was beyond their means? Hundreds like you now find themselves eligible to ownership of the new $900 Hupmobile. In first cost and in assured economy of operation, it makes a touring car possible to scores who have not dared consider one before.

The new Hupmobile banishes three bugaboos which have always confronted the touring car buyer:

(1) The fear that a low price meant poor construction.
(2) The fear of frequent repair.
(3) The fear of a high cost of upkeep.

Fear No. 1 is driven away by the life-long guarantee—and the magnificent record of thousands of Hupmobiles.

Fear No. 2 is left "without a leg to stand on" by this same life-long guarantee.

Fear No. 3 meets its Waterloo in the proof presented by hundreds of owners that in view of the service rendered, a Hupmobile, cared for at home, is cheaper than street cars or horses.

So you are confronted with an entirely new economic proposition.

If a touring car would make life brighter and healthier and happier—

And you can afford to pay for that inestimable boon a first cost of $900, and an after-cost about equal to the average family street car expense, then buy a Hupmobile, with implicit confidence in its rock-ribbed, life-long guarantee

Buy it, too, with this thought in mind:—

That the Hupmobile policy has always been to carry out every promise to the letter.

Hupp Motor Car Company

Licensed under Selden Patent

DETROIT Dept. A MICHIGAN

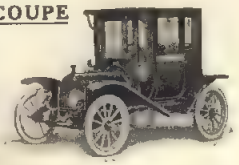
All models shown at Madison Square Garden, New York, January 7-14.

HUPMOBILE RUNABOUT

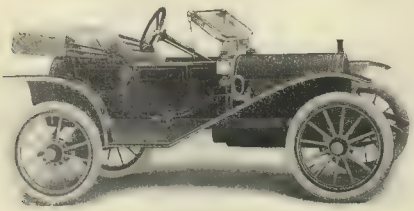
Runabout, $750.—F. O. B. Detroit, including 3 oil lamps, tools and horn. Top, windshield, gas lamps, tank or guarantor, speedometer and trunk rack extra.

HUPMOBILE COUPE

Coupe, $1150.—F. O. B. Detroit. Equipment includes electric headlights, combination oil and electric dash and tail lamps, batteries and wiring; folding seat for third person; shock absorbers in front; 31 x 3½ inch rear tires.



Its third year---and Hupmobile demand unabated



Runabout---$750 F.O.B. Detroit

Equipment includes top, windshield, gas lamps and generator, three oil lamps, tools and horn. All types have 20 H. P., 4 cylinder motor, sliding gear transmission, Bosch Magneto.

Runabout
Fully Equipped
$750 F. O. B. DETROIT

Hupmobile
GUARANTEED FOR LIFE

Touring Car
Fully Equipped
$900 F. O. B. DETROIT

Now, in its third year—amid a bewildering distraction of new models and new prices—the Hupmobile is bought as eagerly as it was in its first season

Then it was a sensational novelty—a car unheard of at a price unheard of.

Today its place is firmly fixed. Its hold has grown stronger and stronger upon those level-headed buyers who always ask and always get the most for their money.

Hupmobile demand has been steady and consistent through two seasons and well into its third.

Public confidence was gained at the outset, and has been held through the keeping of faith, and the giving of generous value.

For weeks our factory has been under the supreme test of working day and night in order to produce cars rapidly enough to keep pace with the volume of orders.

The Hupmobile occupies this unique position because it has been true to itself and true to the people.

It has gone on being better and better until now —with more than $100 added in improvements and almost as much more in equipment—it is as extraordinary a car as it was three seasons ago

---

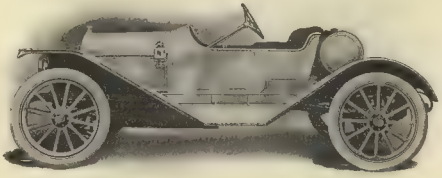
At this time we wish to call attention particularly to the Hupmobile Coupe—which has aptly been termed a "baby grand limousine."

It has gone a long way toward displacing the old idea that an enclosed car is restricted to town use.

It was only recently that three residents of Elgin, Ill., toured in a Hupmobile Coupe from Chicago to Minneapolis, via Mankato, Minn.—more than 500 miles—without trouble of any sort and showing an average of 25 miles per gallon of gasoline over country roads and hills. Last November a physician of Hammond, Ind., drove his coupe home from the factory in Detroit.

HUPP MOTOR CAR COMPANY, 1234 Jefferson Ave., Detroit, Mich.

PENN MOTOR CARS
For 1912



THE PENN LINE for 1912 comprises five models—every one of them a gem—unequaled

Two-passenger Roadster, 105 inch W. B., 30 H. P. Motor, all modern refinements, shrouded dash - **$1000**

Two-passenger Roadster, 105 inch W. B., 30 H. P. Motor, Torpedo dash, fore door - - - **$1000**

Four-passenger Touring, 105 inch W. B., 30 H. P. Motor, fore door, beautifully finished - - - **$1100**

Two-passenger Roadster (The Penn Pirate), full Torpedo, fore door, 115 inch W. B., Annular ball bearing transmission, 45 H. P. Motor - - - **$1350**

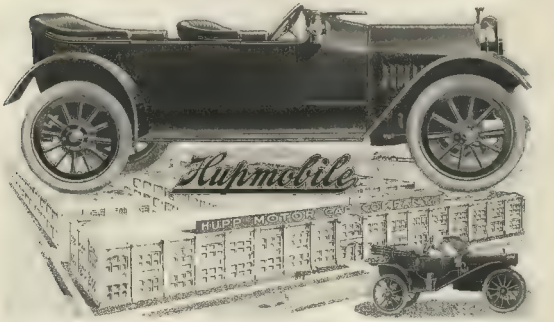
Five-passenger, full Torpedo, fore door Touring, 115 inch W. B., Annular ball bearing transmission, 45 H. P. Motor, a powerful, economical, luxurious, dependable Car, **$1400**

A LINE INCOMPARABLE

DEALERS WANTED IN OPEN TERRITORY

PENN MOTOR CAR CO.

7510 Thomas Boulevard Pittsburgh, Penna.



Hupmobile Long-Stroke "32" Five Passenger Touring Car—$900

F. O. B. Detroit, including equipment of windshield, gas lamps and generator, oil lamps, tools and horn. Three speeds forward and reverse; sliding gears. Four cylinder motor, 3½-inch bore x 5½-inch stroke. Bosch magneto. 106-inch wheelbase 30 x 3½-inch tires. Color—Standard Hupmobile blue

The new touring car will be first exhibited at the Grand Central Palace, New York, Jan. 10-17, and subsequently at the principal automobile shows throughout the country.

Hupmobile Runabout—$750 F. O. B. Detroit, including top, windshield, gas lamps and generator, three oil lamps, tools and horn. Four cylinders, 20 H. P., sliding gears, Bosch magneto.

In the new Hupmobile plant, now nearing completion, which will have when finished a capacity of 15,000 to 20,000 cars a year, the Runabout—always a car of unprecedented popularity—will continue to occupy the same large part in our manufacturing plans that it does at present.

Hupmobile Coupe — Chassis same as Runabout — $1100 f. o. b. Detroit.

Hupmobile Roadster—Chassis same as World Touring Car—$850 f. o. b. Detroit.

A totally new idea of what you ought to get for $900

A five-passenger Hupmobile Touring Car for $900 which *rejects every characteristic of commonplace construction;* and makes clear its invasion of the field above that price, by points of difference and departure which no motorist can mistake.

Evolved out of the experience which has built thousands of the Hupmobile Runabout—the quality car today, as it always has been, of the runabout class.

Designed by E. A. Nelson, Chief Engineer of the Hupp Motor Car Company since its inception and designer of the original Hupmobile Runabout. To him and the skilled shop organization which he has continuously maintained, we owe the inimitable lines, the marked simplicity, the efficiency and the high quality of workmanship incorporated in the Runabout.

Impressed with the same strong individuality as a Runabout; and still further removed from comparison by:—

First, the small-bore, long-stroke motor.

Second, the body design and construction which attains the purpose of the "underslung" and avoids all of its disadvantages; and

Third, the Americanization, after close study abroad, of invaluable engineering principles entirely new to this country.

These highly specialized features speak so plainly of greater structural soundness; more progressive engineering principles; and costlier and more careful shop practice; that it is obvious they proclaim a product without precedent at the price—

Small-bore, long-stroke motor—3¼ x 5½ inches—60% more pulling power for mountain work and heavy roads, 4 to 50 miles of speed; ability to pick up quickly without feeling the weight of the car, or throttle instantly to a walking gait.

Unit power plant.

Cylinders cast en bloc, with three bearing crankshaft (found only in other cars selling upward of $2500) instead of two. Bearings extra large, having bronze back, Babbitt lined

Valves enclosed by pressed steel cover, keeping oil in and dirt out—noiseless, minimum wear, minimum adjustment.

Thirteen-inch multiple disc clutch, action positive, smooth and easy.

Transmission gears of 40 H. P. size, run slowly and quietly.

Full floating rear axle, amply strong for a seven passenger car.

Aluminum crank and gear case; drawn steel used in parts where lightness and strength are requisite.

4½ x 8½ PHOTOGRAVURE FREE

Write for detailed description and the 4½ x 8½ photogravure of the new touring car

Hupp Motor Car Co., 1234 Jefferson Ave., Detroit, Mich.

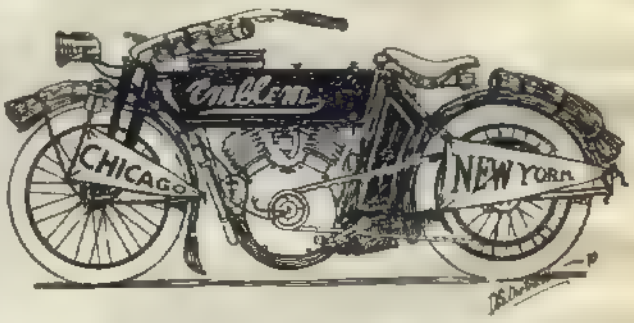
About the EMBLEM

("HANDSOME IS AS HANDSOME DOES")

Have you noticed that the **EMBLEM** is stepping along some? There's always a **reason** behind advancement—we know, **EMBLEM** riders know, **EMBLEM** dealers know, that this machine is coming into its own, because it is a sane and sensible mount, built not for the fad list or crank but for Mr. Average Rider who wants not fuss but service. Please note these three recent ripples in the tide Emblemward

1. **Every EMBLEM entered in the F. A. M. Endurance Run Finished; There were 5 Emblems in—5 finished. Every Emblem covered every inch of the course, and an Emblem was the first machine through.**

2. **The EMBLEM breaks the Chicago to New York record!** Mr. M. E. ——— rode a machine we added this second scalp to the Emblem belt—making time 30 hours. A corking good performance.



3. **One 4-H.P. EMBLEM won first place in the 5-mile club championship; won second in the 2-mile novice, was passed in a fast 5 mile open, finished third to a 7 —— and a 7 —— in the pursuit race, was second to a 7 ——, beating a 7 —— in the fast 100-mile race, all at Cleveland, Ohio, Sept. 10. For one single-cylinder engine, regular stock, to do all that racing (more than 125 miles) in one afternoon, IS REMARKABLE.**

EMBLEM INFORMATION GLADLY FURNISHED. WRITE US.

THE EMBLEM MFG. CO. (Member M. M. A.) ANGOLA (ERIE CO.), N. Y.

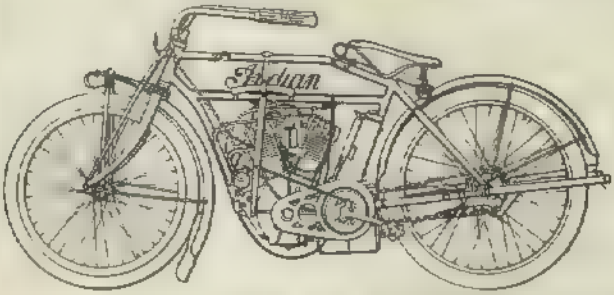
Note These Distributing Houses:

John T. Hill & Co., Los Angeles, for California.
F. M. Spalding, Seattle, for Washington.
Henry Keidel & Co., Baltimore, Distributors for the South.
Ballou & Wright, Portland, for Oregon.
Meredith Cycle Co., Salt Lake City, for Utah.
Bi-Motor Equipment Co., 17 Portland St., Boston, for New England.

JUST A TOUCH OF THE CLUTCH

THE INDIAN

FREE ENGINE CLUTCH



Starts, Stops,
Gives Perfect Control
and Proves
The Indian the Leader
of the World

SEND FOR ILLUSTRATED CATALOGUE P

The Hendee Mfg. Co., Springfield, Mass.

CHICAGO BRANCH
1251 Michigan Avenue

SAN FRANCISCO BRANCH
759 Gough St. (Temporary.

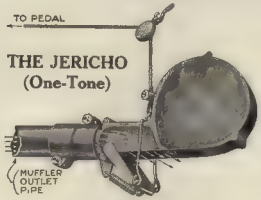
LONDON DEPOT
184 Gt. Portland St.

Jericho ONE TONE Horn

Jubilee CHIME TONE Horn

The Signal of a Gentleman--Warns Without Offence

Assurance against accidents is infinitely better than accident insurance. The ordinary bulb horn is *not enough* –either on winding country roads or on noisy city streets. The Jericho, on the other hand, is *just enough*—the perfect motor car signal—always on the job and doing its work with 100% efficiency. *You can pay more but you cannot get more*—except battery charges and maintenance charges. It is the best horn at any price—and has no battery charges.



THE JUBILEE
(Chime Tone)

Both Jericho and Jubilee have three points of supremacy:

1. EFFICIENCY A loud, clear signal whose mellow tone "warns without offence." The *only* exhaust horn that *cannot* clog.

2. SIMPLICITY Easily attached to any car and operated by foot pedal, leaving both hands free to run the car.

3. ECONOMY Low purchase price. Is operated by the exhaust. No batteries, etc., needed. Absolutely no maintenance cost.

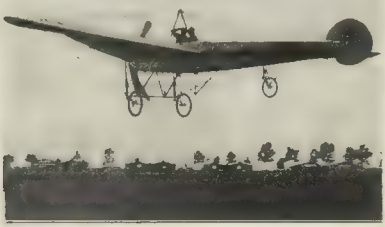
Equip *your* car with a Jericho or Jubilee and motor without anxiety.

Jericho costs, $7, $8, and $9, according to size.
Jubilee costs, $8, $9, and $10, according to size.

Sold by all dealers or direct from us. Send for our free BOOKLET A about Jericho and Jubilee and other auto accessories.

THE RANDALL-FAICHNEY CO., BOSTON, MASS.

DYKES WON OUT



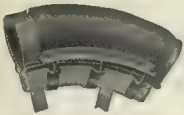
An Air Ship Idea Proves Good

Dykes' Reliners
Two Styles

Dykes' Never Kreep Inner Shoe

Dykes' Double Lock Inner Shoe

Dykes' Clincher



Dykes' Bolted On
Outer Boot

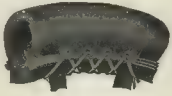
You will notice that the wings and body are inflated. To get this inflation, the exhaust from the engine is utilized and a pressure valve keeps the pressure always the same. This gives a lifting power of some 500 pounds. Dykes' Tire Accessories carried the ship to *Victory*. They will carry you.

HERE IS THE LINE

Everything made from the best Sea Island tire fabric
Every piece guaranteed

Dykes' Everstick Reliner is a complete inside reinforcement made of three-ply "sixteen oz." Sea Island fabric, vulcanized together on the bias with para rubber to make puncture proof. Reliners ordinarily are made from raw or unvulcanized rubber, together with common duck and in most every case overheat your casing. This causes vital trouble.

Each shoe is made on the bias out of Sea Island tire fabric.

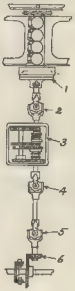


Dykes' Outer Boot
Raw-Hide Lace

Word from you will get our prices and cuts for catalogue.

JOHN L. G. DYKES CO., Chicago, U.S.A.
Phone Central 6354
Branch: CLUCKER-HIXSON CO., 32 Park Place, New York, N.Y.

12th Year
Other Cars
Use This

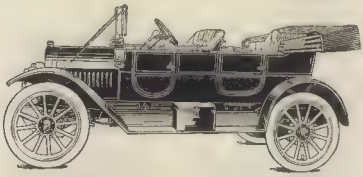


LAMBERT

The Car with a Thousand Speeds

12th Year
The LAMBERT
Pat. Friction Drive

Look at the illustration on the left. Then look at the illustration on the right. Compare the number of parts. The cut on the left illustrates the system of transmitting power from the motor to the rear wheels on most automobiles. The cut on the right shows the system of transmitting power on the Lambert Patent Friction-Driven Automobile.



The first 5-Passenger Touring Car at $1200, equipped with Self-Starter, Top, Windshield, 112" Wheelbase, 35 H. P. Ball Bearing Motor, Gas Tank, Horn, Lamps, Tools, etc.

Be honest with yourself. Did you ever drive a Lambert Friction Drive? Did you ever hear an owner complain of the transmission? Is it not a fact that you have allowed prejudice to take the place of reason? We have demonstrated to thousands that our **friction** will not slip—that the loss of power is less than in a gear transmission—that the cost of upkeep is **less** than the cost of oil used in gear driven cars. We can **prove** it to you, and in doing so will open your eyes to a money-making agency proposition which will surprise you. The Lambert gives you selling features which your competitors cannot touch.

This is an appeal to your reason and your bank account. Our line is complete, $1100 to $1700.

Our proofs of greater efficiency, economy and simplicity are complete and convincing. Our publicity campaign for 1912 will convince buyers whose minds are open. Are you going to share in the profits accruing from the sale of Lambert cars in your territory, or are you going to allow your prejudice to influence your reason?

The agency for Lambert Automobiles is a mighty big money-making proposition. Our contract is liberal. **You** are not being fair to yourself unless you learn about our proposition. Write **today** for complete information.

FIVE MODELS

We will NOT Exhibit at Automobile Shows

The Buckeye Manufacturing Company

156 COLUMBUS AVE. ANDERSON, INDIANA

Lauth-Juergens Trucks

ONE, TWO AND THREE TON

They are delivery insurance. That's why you should investigate Lauth-Juergens' Trucks.

Guaranteed for Life

The motor in Lauth-Juergens' truck is guaranteed for the life of the truck. Can you ask more? Our trucks are made in our own factory, not assembled. Reliable agents should communicate with us at once regarding 1912 Territory. Address

THE LAUTH-JUERGENS MOTOR CAR CO., Fremont, Ohio

SPECIFICATIONS OF TWO-TON TRUCK

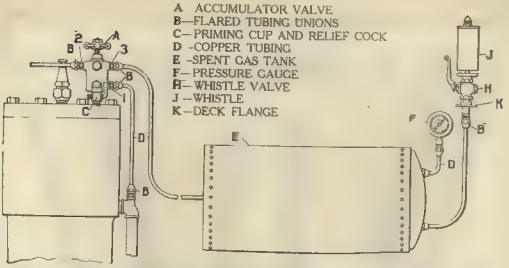
Motor.—40 H P. Rutenber, 4-cylinder, 4¼x5 in.
Carburetor.—Schebler or G. & A.
Ignition.—Bosch High Tension; two separate systems
Lubrication.—Splash system.
Clutch.—Patent three-piece disc, roller bearing, ball-bearing thrust.
Transmission.—Four speeds forward one reverse, Hess-Bright ball bearings and end thrust ball bearings.
Differential.—Large size chrome vanadium; pinion shaft and main jack shaft supplied with large size Hess-Bright ball bearings
Tires.—36x6 in. rear, 28x4 in. front.
Wheel Base.—120 in, unless otherwise ordered.
Body.—13 ft. long, 5 ft. 6 in. wide.
Price.—Chassis with cab and driver's seat upholstered, $2700.00, F. O. B. Fremont, Ohio.
With Stake Body, complete, $2850.00.

PRESSED STEEL FRAMES

FOR MOTOR TRUCKS
AND PLEASURE CARS.

SEND YOUR BLUE PRINTS
AND LET US FIGURE
ON YOUR REQUIREMENTS.

A. O. SMITH COMPANY
MILWAUKEE



LUNKENHEIMER
MOTOR BOAT
WHISTLE EQUIPMENT

provides convenient and positive means for blowing a signal whistle by means of the spent gas from the gasoline engine cylinder. Clear, harmonious sounds are produced that can be heard for miles. The equipment is easily installed, occupies but little space and can be connected to two or four cycle engines from one cylinder up.

Write for Descriptive Circular

"MOST supply houses sell them—yours CAN. If they DONT or WONT—TELL *US.*"

THE LUNKENHEIMER COMPANY

Largest Manufacturers of High-Grade Engineering Specialties in the World

General Offices and Works . . . CINCINNATI, OHIO, U. S. A.

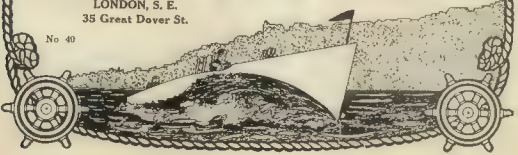
NEW YORK
64-68 Fulton St.

BOSTON, 138 High St.

CHICAGO
186 North Dearborn St.

LONDON, S. E.
35 Great Dover St.

No 40



TYPE A
With sliding throttle controlling the outlet passage. No regulation for lift of disc.

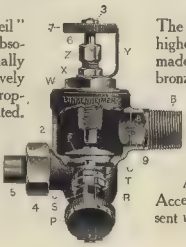
Successful Where Others Have Failed

Gasoline engines that could not be made to work satisfactorily have given results when equipped with

LUNKENHEIMER "Nonpareil" Generator Valves

Lunkenheimer "Nonpareil" Generator Valves are absolutely reliable, exceptionally durable and will positively give satisfactory results if properly connected and regulated.

They are made in a variety of styles and in sizes ranging from ½ to 2 inches inclusive.



TYPE C
With means for regulating lift of disc and butterfly valve in outlet passage.

The material is of the very highest grade, and the discs are made of an extremely strong bronze composition, the tensile strength being about 50,000 pounds per square inch.

A copy of our Motor Accessories Catalogue will be sent upon request. It's free.

Your local dealer can supply them; if not, write us.

THE

Lunkenheimer Company

Largest Manufacturers of High-Grade Engineering Specialties in the World

GENERAL OFFICES AND WORKS:

CINCINNATI, OHIO, U. S. A.

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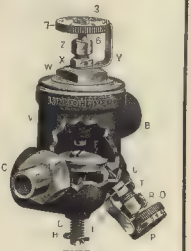
CHICAGO, 186 N. Dearborn Street
BOSTON, 138 High Street
LONDON, S. E. 35 Great Dover Street

199



TYPE B
With regulation for lift of disc. No throttle valve

S. C. S. WOOD RIM TIRE TRUNK

An all-wood tire trunk has just been perfected by S. C. Simon & Company, 1018 Race St., Philadelphia, Pa., which is designed to overcome the difficulty experienced so often with the so-called trunk board rims used on tire trunks. This trunk is waterproof and, as the laminated wood rim will not soften, there is no chance for wearing a hole at the bottom. It is substantially covered with enameled duck, leather-bound and stitched, and felt-lined. A special feature is the reinforcement of the straps by steel bands inside the rim to which the straps are hand

S. C. S. Wood Rim Tire Trunk

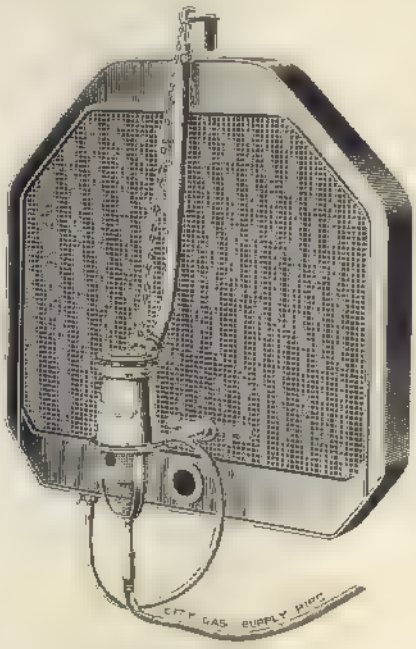
riveted. The bands are bent and further riveted to the heavy front and back so there is but little strain on the rim. A new type of lock designed especially for automobile service is used on this trunk. The lock is rattle-proof and a different key is used for each one. The arch employed on the trunk has been designed to give the greatest amount of available opening, but at the same time to be strong enough to resist the shocks incident to motoring service. The arch is leather covered and is guaranteed non-breakable. The price for any size up to 27 in. is $12.

THE NEVEROUT PATENT RADIATOR HEATER

The Neverout Patent Radiator Heater fills a long felt want and keeps the water, oils, carburetor, etc., in proper condition during the cold winter weather. It can be attached instantly to the front of an automobile and detached at will. The illustration, herewith, shows the apparatus using as fuel, city illuminating gas.

The water is completely circulated—the intake being supplied by the pet cock at the bottom of radiator, after which it passes through a series of coils, which are heated, the hot water being returned through a hook spout which is thrust into the water filler of radiator.

The Neverout Patent Radiator Heater makes it possible to store automobiles or commercial trucks in unheated garages or stables, doing away with the expense of costly heating installation. The benefits accruing from the use of this heater are obvious to the experienced automobilist. Parties who have used the same state that their cars will run as well in winter as during the warmer periods of the year.

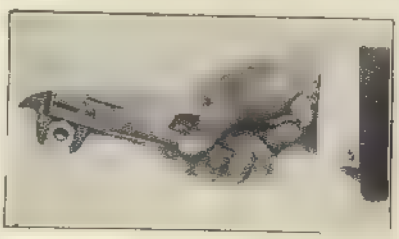


Neverout Radiator Heater.

The Neverout Patent Radiator Heater is manufactured and controlled by the Rose Manufacturing Company, of Philadelphia, Pa., the well-known manufacturers and originators of the celebrated Neverout Patent License Brackets and Neverout Lamps, etc.

MAGIC COMBINATION TOOL

The Hood Manufacturing Company, 221 Columbus Avenue, Boston, Mass., is offering for 1912 the Magic combination tool, a cut of which is shown herewith. The tool can be used as a pair of pliers, with adjust-



Magic Combination Tool

able parallel jaws, as a wrench for nuts, as a pipe wrench, etc. It has a screw driver on one handle and a tack puller on the other. The cotter pin remover will be found very convenient for use around the automobile.

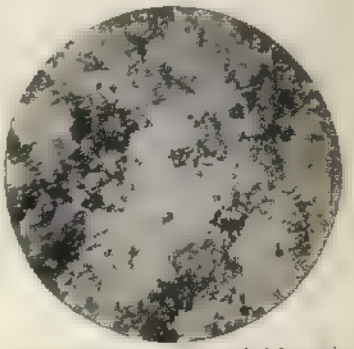
Neglected Ball Bearings are like Neglected Tires

They do not complain at the time, but the due penalty is exacted nevertheless.

Moisture, acid, free alkali, dirt, and all solid particles and gummy substances —these are the great enemies of anti-friction bearings. If the oil or grease contains them, or permits them to reach the bearings, it is an enemy to the bearings, not a help.

Most greases are made for plain bearings —and plain bearings will bear much greater license than ball bearings, as regards the ingredients of the lubricant. The use of such greases in anti-friction bearings may lead to seriously reduced life or early destruction of the bearings.

To enable users of HESS-BRIGHT BALL BEARINGS to make sure of the character of their lubricant, we have had compounded for us the



Micro-photograph of ball attacked by acid. Actual diameter of area shown, 1/32 inch.

HESS-BRIGHT BALL BEARING GREASE

in two densities suited to all grease uses: No. 1, HEAVY, for steering knuckles, wheel hubs, etc.; No. 2, MEDIUM, for gear and axle cases, clutch bearings, etc.

HESS-BRIGHT GREASE is made from the purest Pennsylvania mineral oil, refined and suspended in a body of saponified horse oil. Extreme care is used to secure a perfectly neutral product, free from alkali yet having no tendency to turn rancid. We recommend it for all uses where anti-friction bearings are involved and the shaft speeds do not exceed 2500 r.p.m.

Don't accept substitutes! *They are dangerous.* If your dealer will not supply you, write to the nearest concern in the list below, or to us direct.

NEW YORK CITY, The Hess-Bright Co., 1974 Broadway.
CHICAGO, ILL., The Hess-Bright Co., 1800 Michigan Ave.
BOSTON, MASS., The Post & Lester Co., 288 Devonshire St.
HARTFORD, CONN., The Post & Lester Co., 178 Asylum St.
PORTLAND, ME., Maine Motor Carriage Co., 43 South St.
SCRANTON, PA., The Chas. B. Scott Co., 119 Franklin Ave.
WASHINGTON, D. C., Auto Livery Co., 212 13th St., N. W.
ATLANTA, GA. Alexander-Seewald Co. 84 N. Pryor St.
ST. LOUIS, MO., Neustadt Auto & Supply Co. 3948 Olive St.
KANSAS CITY, MO., Kansas City Auto Supply Co., 1804 Grand Ave.
DENVER, COL., Auto Equipment Co., 1918 Broadway.
SAN FRANCISCO, CAL., Chanslor & Lyon Motor Supply Co., 501-7 Golden Gate Ave.
LOS ANGELES, CAL., Chanslor & Lyon Motor Supply Co., 945-7 S. Main St.
FRESNO, CAL., Chanslor & Lyon Motor Supply Co., 1246 J St.
SEATTLE, WASH., Chanslor & Lyon Motor Supply Co., 916 E. Pike St.
SPOKANE, WASH., Chanslor & Lyon Motor Supply Co., 1405 First Ave.

The HESS-BRIGHT MANUFACTURING CO.
2102 Fairmount Avenue
PHILADELPHIA, PA.

MARVEL CARBURETER
THE NAME DEFINES IT

The Marvel System Which Automatically Controls the Supply of Heat to the Mixture Has Solved This Serious Problem

The poor grade of gasoline supplied to-day must be compensated for by the application of heat but to obtain perfect carburation the supply of heat must be regulated to meet throttle conditions. At low throttle the tendency for poor grade of gasoline to condense is great, consequently more heat is required. THE MARVEL SUPPLIES JUST THE RIGHT AMOUNT OF HEAT AT LOW THROTTLE.

ON OPEN THROTTLE LESS HEAT IS NEEDED—THE MARVEL SUPPLIES THE PROPER HEAT AT OPEN THROTTLE.

The application of too much heat at the wrong time reduces the power and wastes the fuel.

THE MARVEL HEATS BY GAS from the exhaust pipe—**NOT BY WATER** from the radiator.

Ask any unbiased judge what it means to be able to automatically control the supply of heat and he will say:

THE MARVEL MODEL H

The Marvel System means Greatly Increased Power, Greater Flexibility, Decided Economy of Fuel Consumption and Perfect Mixture at All Speeds.

There is a Marvel for your Car for every make of car prices range from $15.00 to $22.00.

PROSPECTIVE CAR OWNERS: Specify the Marvel Carbureter on your new car and start free from carbureter troubles.

LOCAL REPRESENTATIVES WANTED in unoccupied territory

Our booklet, "INSIDE INFORMATION," tells why gasoline is poor, why heat is needed and why automatic control of heat is absolutely necessary. May we send you a copy?

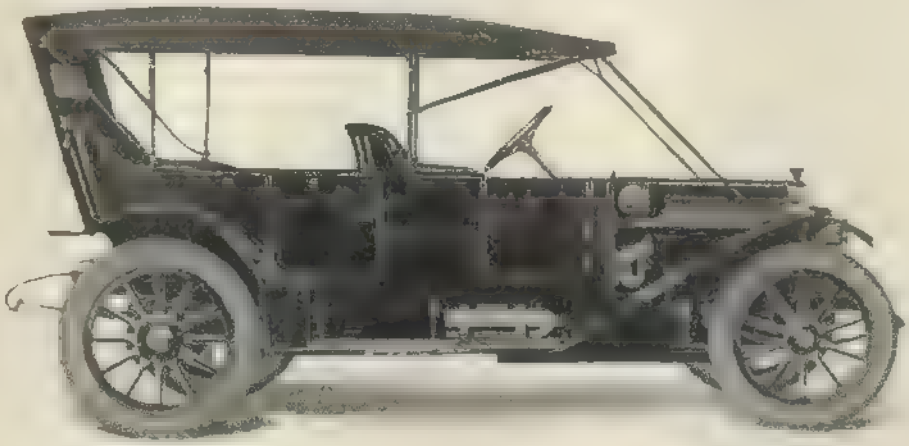
MARVEL CARBURETER CO.

2224 N. ALVORD STREET, INDIANAPOLIS, IND

1912 WILL BE A

COLBY "40" more than ever in a class by itself

Since announcing this car nine months ago we have sold over 500.



$1750 **MODEL H** **$1750**

(Specifications for 40 H. P. Model H.)

Motor:	4 Cyl. 40 H.P. 4 Bore, 5½ Stroke.
Cooling:	Water Cooled. Tubular Radiator. Centrifugal Pump.
Ignition:	Dual System. Dixie Dual Spark. 4 Bar Magneto.
Lubrication:	Pressure System to Crank Shaft Bearings. Splash to Cylinders.
Clutch:	Multiple Disc. Steel on Steel Faced.
Transmission:	Selective Sliding Gear. 3 Speeds Forward and 1 Reverse.
Rear Axle:	Full Floating. Shaft Drive. Hypoid Bevel Gear.
Brakes:	Internal on Rear Wheels. Expanding and Contracting.
Springs:	Semi-Elliptic Front. Three Quarter Elliptic Rear.
Front Axle:	Pressed Steel I Beam Type.
Frame:	Pressed Steel with Side Frame 32 inches Wide Base.
Steering Gear:	Non-Reversible Worm and Gear. 18 inch Rim.
Wheels:	32 x 3½ Front and Rear Fitted with Baker Demountable Rims.

Get out your catalogs and compare these specifications with other models anywhere near the price. **More Automobile Than Any Other Manufacturer Is Giving For Less Than $2500.00.**

Get in line for 1912 Agency.

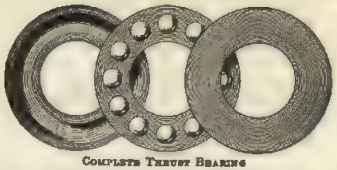
Write or wire.

COLBY MOTOR COMPANY

Mason City, Iowa

THE STAR BALL RETAINER CO.

Lancaster, Pa., U.S.A.



Complete Thrust Bearing

Radial Retainers

Manufacturers of Radial Ball Retainers, Thrust Ball Retainers, Complete Thrust Bearings, Special Stamping, etc.

CURTISS MOTORS

are used exclusively on Marvel Motorcycles. Send for description of the 1911 model. Immediate shipment.

A few more desirable agencies will be placed.

MARVEL MOTORCYCLE CO.
Hammondsport, New York

RELIANCE Motorcycle

GET CATALOG AND PRICES

Reliance Motorcycle Co.
Owego, Tioga Co.
NEW YORK

Motor Cycle Supplies

New York Distributors of
MERKEL MOTORCYCLES

Send for Catalogue and bargain sheets.
Second-hand machines, $50 up.
Special motor cycle accessories, chain tools, etc.

F. B. WIDMAYER CO., 2312 Broadway New York City

MORGAN & WRIGHT TIRES ARE GOOD TIRES

SPROCKETS
for Bicycle and Motorcycle

WE MAKE 90 PER CENT OF THE SPROCKETS USED

THE PARISH & BINGHAM CO.
Cleveland, Ohio

THE FLYING MERKEL

Being the only motorcycle with a Spring Frame and Spring Fork it takes rough roads as easily as it does smooth ones. Send for catalog "A."

Merkel-Light Motor Co., Pottstown, Pa.

1911 Proposition on Bicycles and Bicycle Tires

Now Ready

Write for Prices

SIDNEY B. ROBY CO., Rochester, N. Y.

Minneapolis TWO-SPEED MOTORCYCLES

FRICTION CLUTCH ON MOTOR

Write for Catalog

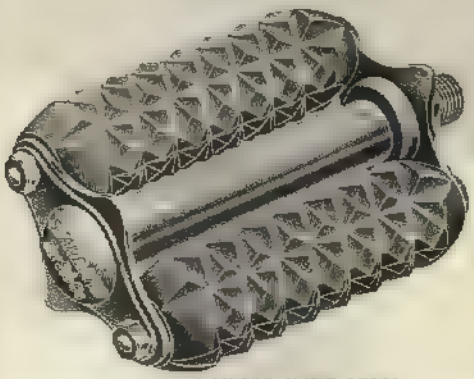
Minneapolis Motorcycle Co., Minneapolis, Minn.

Commercial Post Cards IN NATURAL COLORS

Made to order to suit your requirements. Make good ads., at reasonable prices. Send us pieces of your printed matter, but ask for *Samples* and *Prices.*

CHILTON COMPANY :: Market & 49th Sts., Philadelphia

Standard Motorcycle Parts



No 3 MOTOR CYCLE PEDAL

are just a little bit better than anything else of the kind on the market. That's why machines that are **STANDARD** equipped sell quicker than others.

STANDARD PEDALS wear well. They are strong and light, and the deep corrugations in the rubber hold the foot firmly and absorb vibration. They are reversible, thus enabling the rider to get the fullest service from them. Write for details of our complete line, which includes **Spokes** and **Nipples, Bridgeport, Star** and **Standard Bicycle Pedals, Sager** and **Standard Toe Clips.**

The Standard Co., Torrington, Conn.

Furnished on All Good Bicycles They Help You Sell

Specify Them

CONSOLIDATED MANUFACTURING COMPANY
1719 Fernwood Ave. Toledo, Ohio

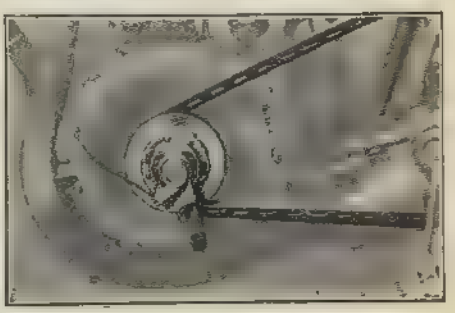
F. C. CORNISH, Eastern Representative
219 Clinton Avenue Newark, New Jersey

CURTISS MOTORS

are used exclusively on Marvel Motorcycles making them the best touring machine possible to buy. Send for description of the 1911 model. Immediate shipment. *A few more desirable agencies will be placed.*

MARVEL MOTORCYCLE CO.
Hammondsport, New York

The Eclipse Free Engine Pulley



For sale nearly everywhere. If your dealer does not sell it, write to us and we will tell you where it can be purchased.

Price, $15.00

Can be attached to any belt-driven motorcycle. Saves gasoline and muscle, as the power can be shut off on the down-grade and the motorcycle can be started without working against the compression of the engine. It works on the principle of an automobile clutch and for steep hill work can be readily slipped to increase climbing power.

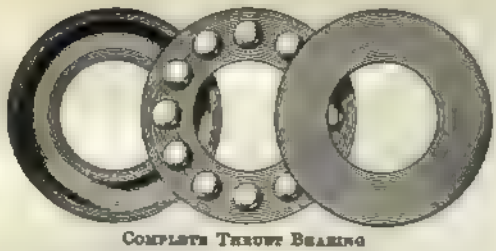
We "made good" with our **Eclipse Coaster Brake,** and we stake our reputation on the **Eclipse Free Engine Pulley.**

We are also manufacturing Aeroplane hubs. If interested, write for particulars.

Eclipse Machine Company
ELMIRA, N. Y.

THE STAR BALL RETAINER CO.

Lancaster, Pa., U.S.A.



Complete Thrust Bearing

Radial Retainers

Manufacturers of Radial Ball Retainers, Thrust Ball Retainers, Complete Thrust Bearings, Special Stamping, etc.

Automobile Frames and Sprockets

Write for Prices

THE PARISH & BINGHAM CO.
CLEVELAND, OHIO

THE FLYING MERKEL

makes all roads seem smooth and affords a greater amount of solid comfort than any machine on the market. Send for Catalog "A"

Merkel-Light Motor Co., Pottstown, Pa.

1911 Proposition on Bicycles and Bicycle Tires

Now Ready

Write for Prices

SIDNEY B. ROBY CO., Rochester, N. Y.

Motor Cycle Supplies

New York Distributors of

MERKEL MOTORCYCLES

Send for Catalogue and bargain sheets.
Second-hand machines, $50 up.
Special motor cycle accessories, chain tools, etc.

F. S. WIDMAYER CO., 2312 Broadway, New York City

AUTO GOODS

Motorcycle Supplies

We want every dealer to have our Catalogue and Bargain Bulletin. Tell us if you need Automobile Accessories or Motor-Cycle or Bicycle Supplies.

NEW YORK SPORTING GOODS CO.
15 and 17 Warren St., New York

MANUFACTURERS DO YOU USE POST CARDS

In Colors for Advertising Purposes?

If not, why not?

If you have an attractive factory, pictures in natural colors on post cards are just what you require to let your customers know what you know.

Exteriors or interiors or illustrations of your products make fine subjects for post card advertising. Send for prices, samples and suggestions.

CHILTON COMPANY

Market & 49th Sts., Philadelphia

WAGNER MOTORCYCLES

"4-11" MODELS

Battery or magneto. Rubber or leather V belt or flat belt and idler.

A live agency proposition for dealers

"The machine that has made them all talk"

WAGNER MOTORCYCLE COMPANY
319 Cedar St., St. Paul, Minn.

SHEET ALUMINUM FOR AEROPLANE COVERING

Will you kindly advise me, through columns of your valuable paper, if and why aviators experience any troubles by using sheet aluminum for aeroplane covering.

Thanking you for your kind information, I am, yours respectfully.

WILMINGTON, DEL. ERNEST NOWAK.

Thus far none of the well-known machines have used sheet aluminum for an aeroplane covering. There seems to be no reason why this cannot be done except the fact that it would add considerable weight, and most of the constructors thus far have had difficulty in keeping down the weight. In all probability some of the machines of the future will have sheet metal coverings for the wing surfaces.—Ed.

RIBS SHOULD BE COVERED ON BOTH SIDES

Would be glad to receive a reply to the following questions in the January number of the Trade Journal, Aerial Department.

Why is it that in all aeroplanes the covering is stretched on the top surface? It seems to me it would be desirable to have the under side smooth as it supports the weight, the ribs, etc. being on the top side as they actually would not hinder the progress of the machine as the air on top is bearing no weight.

What causes a bird to progress through the air when it works its wings? This seems a simple question, but I have heard a number of answers, and I desire to know which is right.

STATEN ISLAND, N. Y. HARRY LAWRENCE.

You are incorrect in stating that the covering in all aeroplanes is stretched on the top surface of the frame. Some of the earlier machines were so constructed. In the Curtiss, the fabric was laced through holes in the middle of the ribs, but in the later machines, and one might say the best machines that are now made, the fabric is stretched on both the upper and under surfaces. If only one side is to be covered you are undoubtedly correct in supposing that this should be the under side.

The forward motion of a bird is caused by a partial backward thrust of the air due to the peculiar elliptical movement of the wings. There is a downward and backward thrust. The forward motion feathering, as it were, so as to pass to the forward position again without offering any more resistance than is necessary.—Ed.

LEGAGNEUX REACHES 10,499 FEET

The progress of aviation has been so remarkable in the six months since the meet at Atlantic City, when Brookins reached an altitude of 6,175 feet, that each month we have recorded in these columns one or more new altitude records. No one, however, had reached 10,000 feet, even though a prize of $10,000 was offered during the International Meet.

Legagneux, the first man to reach an altiture of 10,000 feet in a heavier than air machine.

However, that mark has at last been reached and passed, Legagneux, in a Bleriot reaching a height of 10,499 feet at Pau, France, on December 9. After reaching that remarkable altitude, he glided down dexterously, in quick time, in spite of the fact that he was numb with the cold.

Metz-Air-Car

BLERIOT TYPE
EVERYBODY MAY FLY

Aeroplanes, complete or in the knock-down. Motors 30, 60 and 120 H. P., propellers and all component parts.
Manufacturers of Metz Runabouts—lightest and most economical automobile in the world.
We want live progressive dealers everywhere.

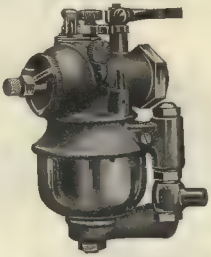
METZ COMPANY
Waltham, Mass.

Minneapolis BIG 5

Two-Speed Gear and Clutch enclosed and running in oil. Write for catalog.

MINNEAPOLIS MOTORCYCLE CO.
517 S. 7th Street Minneapolis, Minn.

HEITGER CARBURETERS
For Motorcycles



Gives minimum and maximum speeds, one setting. Gives 4 to 75 miles per hour according to size engine, from 75 to 100 miles per gallon.

HEITGER CARBURETER COMPANY
1150 Beecher Street INDIANAPOLIS, IND.

HAVE YOU

a car for sale? Do you want to buy a second-hand car?

Use the Classified Columns of this Journal : : :

Small cost, large returns. Try and you'll be convinced.

The Chilton Aero Directory

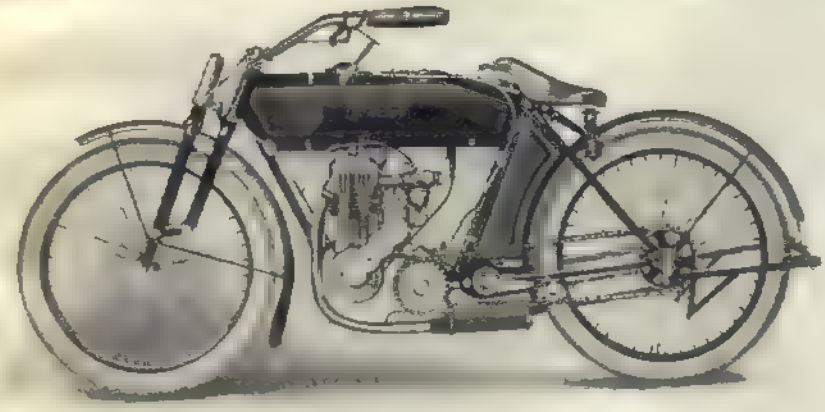
Price, $1.00 per copy

Contains classified lists of all the makers and handlers of Aeroplanes and Flying Machines of all descriptions, materials and parts; also Aviation Sundries and Accessories.

If you are in this line, forward full particulars at once so that you will be properly listed.

Chilton Company, MARKET & 49th STREETS PHILADELPHIA

1911 Model Minneapolis BIG 5



The first motorcycle with a **Unit Power Plant**. Multiple disc clutch and two speed gear enclosed in oil-tight case.

Write for particulars.

Minneapolis Motorcycle Company

517 South 7th Street :: Minneapolis, Minn.

1911 YALE Motorcycles

The steady increased sale of the 1911 Models is the best evidence we can offer that Yale Motorcycles are **best** and that the word Yale means QUALITY in every sense of the word and QUALITY COUNTS.

We are closing agencies every day with pioneer dealers who have been through the mill and know

You owe it to yourself to investigate these Quality Motorcycles before spending your money

THE CONSOLIDATED MFG. CO.

1710 Fernwood Avenue :: :: TOLEDO, OHIO

F. C. Cornish, Eastern Representative, 219 Clinton Ave., Newark, N. J.

We also make Yale and Snell Bicycles, Hussey Handle Bars and Drop Forgings of every description.

THE STAR SPEEDOMETER

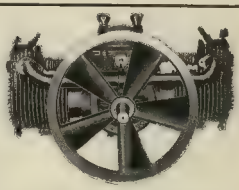
Maximum Hand protected by Lock and Key. $35.00.

Indicates by its neat dial and pointers the exact speed, per hour, at which you are going. Being a centrifugal Speedometer it does its work as accurately during the warmest days of summer as well as during the cold bleak days of winter. Climatic changes make no difference to the "Star," and that is why the people want the Star Speedometer.

Prices, $15.00 to $110.00

If your dealer does not keep the "Star," send your order direct to us.

THE STAR SPEEDOMETER CO.
MILTON, PENN'A



OPPOSED TYPE MOTORS

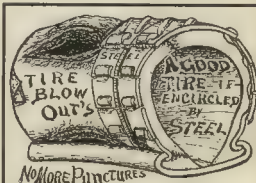
Built in sizes $4\frac{1}{2} \times 4\frac{1}{2}$, $4\frac{3}{4} \times 4\frac{3}{4}$, $5 \times 4\frac{3}{4}$ and 5×5, air or water cooled.

Catalogue for the asking

MONARCH MOTOR MFG. CO.
3145 N. Halsted St., Chicago

A complete stock of supplies at the call of the trade.

Manufacturers Supplies Co.
S. W. Corner Cherry and Juniper Streets
PHILADELPHIA, PA.



DON'T! THROW AWAY YOUR **OLD**

BLOWN OUT, RIM CUT PUNCTURED

TIRES

COVER THEM WITH

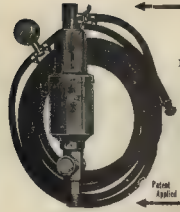
KIMBALL **STEEL** PROTECTORS

INSTEAD—AND USE THEM FOREVER

Your Good Tires Also Need Protection

Let us send you our circular with introductory prices.

KIMBALL TIRE CASE CO. 163 Broadway Council Bluffs, Ia.



BROWN IMPULSE TIRE PUMP

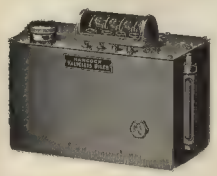
PRICE, $15.00—Including

Recording Gauge, 12 ft. of Hose and Self-Opening Valve Connection.

Don't worry any longer about inflating your tires. Get the full mileage by keeping them up to required pressure. We can do the work in about four minutes—nothing to watch but the Gauge. No gears, bearing, etc. to wear out—in fact only one moving part. Pumps pure air. Your dealer has heard of this pump or we will serve you direct. Specify this equipment on your 1912 car—lots doing it.

See This Pump Demonstrated at the New York and Chicago Shows

THE BROWN CO., 1069 S. Clinton St., Syracuse, N. Y.



WHEN YOU GET OUR CATALOG

you'll understand why everybody who has used a Hancock Valveless Oiler swears by it and not at it.

A postal brings it. Write us to-day

HANCOCK MFG. CO.

776 HENRY ST. CHARLOTTE, MICH.

Electric Head Light Reflector

The Columbus Auto Brass Co.

Columbus, Ohio

Mfrs. of ELECTRIC LIGHT EQUIPMENT For Automobiles

Write for Catalogue

Superior Radiator and Sheet Metal Parts

Electric Head Light

Blood Bros.' Universal Joints

Style A

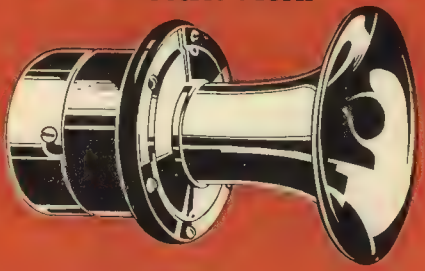
This method of lubricating cannot be beaten.

Improved grease caps that cannot lose off.

Blood Bros.' Machine Co.

Manufacturers Kalamazoo, Mich.

The MONOPLEX Electric Horn



¶ No futile honking if you have a MONOPLEX. Its cry of instant warning is effective where the ordinary horn fails—yet it is not offensive. Its instant response in an emergency saves seconds which are wasted with a bulb horn.

¶ The car owner finds the MONOPLEX just right for all purposes—amid city traffic or on country roads. He finds that the MONOPLEX pays for itself in the current it saves, not to mention the accidents it avoids.

¶ The dealer likes the MONOPLEX because we stand back of it and because it satisfies his customers.

Mr. Dealer:—Are you selling Atwater Kent equipment? If not, we will be glad to hear from you.

ATWATER KENT MFG. WORKS

41 North Sixth Street
Philadelphia, Pa.

LARGEST CAPACITY

For the manufacture of Metal Bodies, Fenders, Forged Irons, Hoods, Tanks, Shields, Housings, Tool Boxes, Battery Boxes and Auto Sheet Metal Parts. We do the best enameling in black and colors. Let us make your 1912 samples and quote prices.

HAYES MANUFACTURING COMPANY **DETROIT, MICHIGAN**

What the Motorcycle Manufacturers Will Exhibit at Madison Square Garden and at Chicago

Aurora Automatic Mch. Co. (M 708; C CA 94-95) will exhibit one of its new 1912 model CE's. This is the single cylinder battery chain drive machine and lists at $175, and also a single cylinder 4 h. p. magneto belt drive machine, enameled blue and listing at $200. An entirely new designed model W's will be shown, the same being a 5 h. p. magneto single cylinder chain drive model and an exact duplicate of the big twin excepting the motor.

Consolidated Mfg. Co. (M 704; C CA 127). For the coming season this concern is manufacturing two twins and two singles. The feature of this year's line is a new 5 h. p. twin, having a bore of 2¾ in. and a stroke of 3 43-64. Both twins are fitted with magneto only. The prices on these are $210 for the battery, $235 for the magneto single, and $260 for the 5 twin and $285 for the 7 h. p. twin.

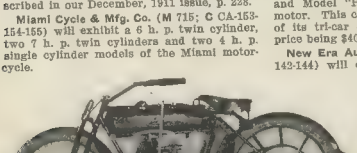
Emblem Mfg. Co. (M 713; C C.A. 147-150) will exhibit the Emblem motorcycle in five different models, namely: one 4 h. p. battery ignition; one 4 h. p. magneto; one 5 h. p. battery and a 5 h. p. magneto; also a 7 h. p. magneto with tandem attachment.

Hendee Mfg. Co. (M 703; C C.A. 138-139) will exhibit its complete line of 1912 models.

For detail description see **Motorcycle Department.**

Henderson Motorcycle Co. (M 709; C C.A.-114). This company will exhibit one model of its four cylinder machine. This machine is a new-comer on the market and was described in our December, 1911 issue, p. 238.

Miami Cycle & Mfg. Co. (M 715; C CA-153-154-155) will exhibit a 6 h. p. twin cylinder, two 7 h. p. twin cylinders and two 4 h. p. single cylinder models of the Miami motorcycle.



Minneapolis Model "R" Two Speed Belt Drive Machine

The above cut shows the Minneapolis Motorcycle Company's latest product and which will be exhibited at Space 702 Madison Square Garden. The transmission consists of enclosed drive gears on Schafer Ball Bearing, 2½ in. flat belt, 7 in. drive pulley, 15 in. wheel pulley; no clutch; gear ratio 4½ to 1 on high, 9 to 1 on low; belt idler.

Minneapolis Motor Cycle Co. (M 702; C CA 79) will exhibit its complete line consisting of Model "R," a new belt-drive, two-speed machine; Model "P," a regular belt drive and Model "N," a spring frame chain drive.

Model "N" will be, in 1912, practically the same as the model for the present year, but with a few changes made in the construction, namely, stronger and larger gears in the transmission, and refinements of the details throughout the entire machine.

Model "R," illustrated herewith, is a new two-speed, belt drive model, built in every particular, with one or two exceptions, the same as Model "N." It will have the same unit power plant, but with the clutch left out. For the transmission of power from plant, a 2⅛ in. flat belt will be used. The drive pulley will be 7 in. in diameter, and the wheel pulley 15 in. Free engine will be provided in exactly the same way as is provided on Model "N," that is, by shifting transmission gear to a neutral position. One of the distinctive and vital points of interest in connection with the operation of this machine will be that the simple operation of moving shifting lever will be all that is necessary in order to use the two speed transmission and free engine.

Model "P" will not be changed in construction with the exception of mud splashers to front and rear mud guards. Price will remain the same, or $240. All models will have a 5 h. p. motor, Models "N" and "R" being equipped with our unit power plant, and Model "P" with a regular belt drive motor. This company has reduced the price of its tri-car delivery van to $375, former price being $400.

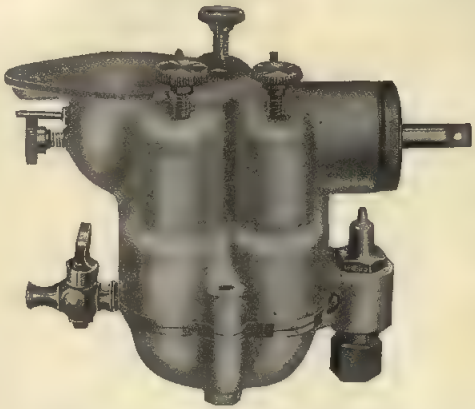
New Era Auto-Cycle Co., (M 714; C, C A 142-144) will exhibit the following models: No. 12 G, 4 h.p. Magneto Auto-Cycle, single cylinder, No. 12 G, 4 h.p. Magneto Auto-Cycle, single, equipped with tandem attachment and one New Era Tri-Car.

Pierce Cycle Co. (M 705; C C 151-152) will exhibit the line of motorcycles described in our December, 1911, issue, page 226, including Model "12A" single cylinder, Model "12B" single cylinder, "12C" single cylinder, and a four-cylinder shaft-drive model

Wagner Motorcycle Co. (C CA-130) will show two of its motorcycles, type "4-12" and type "M" in both battery and magneto models.

MANY CARBURETORS IN ONE

MULTIPLE JET CARBURETOR



This model is equal to a cluster of three carburetors:

One Set for Low Speed

One Set for Medium Speed

One Set for High Speed

"Why didn't someone think of this before?" is a question often asked by enthusiastic users of the MULTIPLE JET CARBURETOR. We answer,—"Don't know," for it does seem odd that so important a feature of motor car development should have been but recently discovered.

The principle is simple and the result startling, for horse-power is greatly increased and fuel consumption minimized.

The principal features which make it different and better than other carburetors are the jets and air valves, which work in unison and produce a perfect mixture at all engine speeds and under all conditions.

JETS

These are so arranged that as the throttle is opened, first one and then another is brought into action as increased power is needed. Each jet can be set in a few minutes by any motorist and does not require readjustment for atmospheric conditions. Single jet carburetors are required to cover too wide a range to render satisfaction now that only a low grade of gasoline is available.

SIZES AND PRICES

Horizontal Flanged Outlet, 1¼ in., Two Jet, Price, $15.00

Vertical Flanged Outlet, 1¼ in., Two Jet, Price, $15.00

Vertical Flanged Outlet, 1¼ in.,Three Jet, Price, $20.00

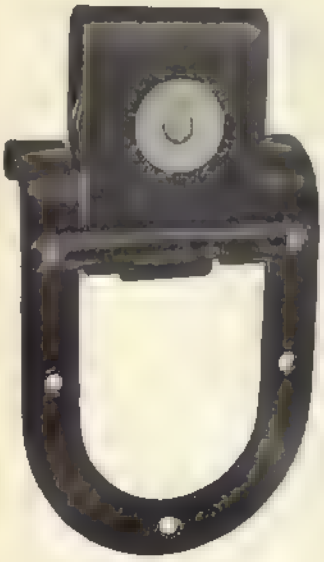
Vertical Flanged Outlet, 1¼ in., Four Jet, Price, $25.00

WRITE FOR BOOKLET

Multiple Jet Carburetor Company, Dayton, Ohio

We Initiate—Never Imitate

Hanger Superiority



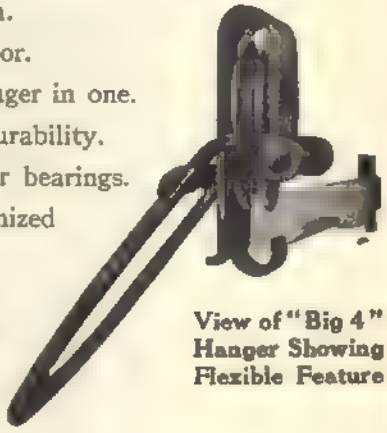
Front View
"Big 4" Hanger

BIG 4 HANGERS and BRACED RAIL have distinctive features good, strong, indisputable talking points that help to make sales.

Why carry a stock of half-dozen varieties when you can carry THE BIG 4 HANGERS and suit all tastes and pocket books?

POINTS OF SUPERIORITY

Simple in construction.
Easily attached to door.
Flexible and rigid hanger in one.
Great strength and durability.
Anti-friction steel roller bearings.
Axles and rivets galvanized to prevent rust.
Shoulder on axle prevents wheel housing from binding.



View of "Big 4" Hanger Showing Flexible Feature

BRACED RAIL

On which the BIG 4 HANGERS run is made from 1¼ x 3-16" planished, machine straightened steel. The brackets are braced from below, giving a third more strength to the rail. Made in four, six, eight and ten foot lengths. Eight pieces of each size in a bundle.

BRACED RAIL

Do you want the exclusive sale? It's yours for the asking.

Write to-day for our proposition. It will interest you.

Ask for general catalog and booklet "F." Sent free.

NATIONAL MANUFACTURING COMPANY

STERLING, ILLINOIS

Don't Overlook This Opportunity

to add to your profits. Here's an article particularly suited to the hardware, household and kitchen supply trades. It meets a long-felt want and sells at a popular price.

THE PORTABLE DOOR HOLDER

Full size Weight 5 oz

holds any door at any angle. It is compact, strong and unobtrusive. It is not attached to the floor or door—requires no stooping over—merely a pressure of the foot to apply or release it. It is the only Portable Door Holder on the market. Door Stops attached to the door mar the floor and injure the carpet. This is made on the right principle—it will not do either.

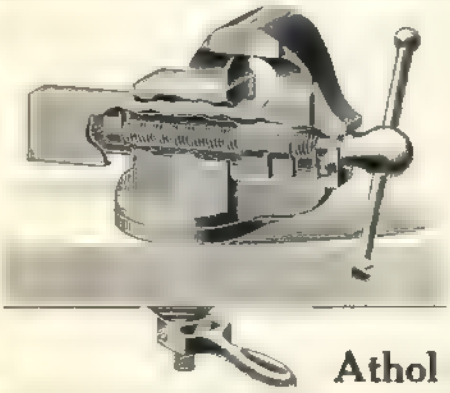
The field is unlimited—the home, offices, hotels, steamships and public buildings. The selling price —50 cents—within reach of all.

In three finishes—nickel, old English brass and oxidized copper—to meet all demands.

DON'T FAIL TO GET A SAMPLE ORDER

PORTABLE DOOR CHECK CO. 141 Milk Street **BOSTON, MASS.**

HARMON & DIXON, Agents, 117 Chambers Street, New York City.



Simpson Quick-Acting Swivel Base Vise

Speed in adjusting and general convenience are the strong features of this vise. By simply raising the front jaw the adjusting screw and nut are disengaged. Thus the jaw can be quickly adjusted to the work. Dropping the jaw and turning the screw ONCE gives the required grip.

There is no intricate mechanism involved. All parts subject to strain and wear are greatly strengthened and reinforced.

Like other Simpson vises, it is fully guaranteed against defects in workmanship and material and breakage under ordinary conditions.

Catalog No. 31 contains full particulars. Get it.

Athol Machine Co., Athol, Mass.

"AMERICAN SEAL"

Elastic Oil Roof Cement and Roof Paints are two products that Hardware Dealers can safely and profitably stock. They net good profits and give maximum satisfaction to the consumer.

Elastic Oil Roof Cement is used in bedding tile and slate roofs, repairing leaks and pointing up; remains elastic and flexible and weather proof in all temperatures.

The Metallic Roof Paint is perfect protection for all surfaces exposed to the elements and will prevent the process of rust and decay in steel, iron and metal of all kinds.

"American Seal" Stove Putty and Asbestos Furnace Cement are two more good sellers for the Hardware Dealer. Write for full particulars. Prices furnished upon request.

THE WM. CONNORS PAINT MFG. CO., TROY, N. Y.

The Latest "NEWTONE"

MADE IN THREE STYLES

"The Mile Away Motor Horn"

Patented September 5, 1911

Standard Equipment for 1912 Cars

TORPEDO TYPE

A BEAUTY JUST OUT

Price, $20 Complete, including Button and Cable

ONCE HEAR THIS HORN AND YOU'LL NEVER USE ANY OTHER

EFFICIENCY—ECONOMY—STYLE

The fields of our NEW MOTOR are made up of 75 very thin disks of special steel, thoroughly insulated—this new field construction produces *more power* with *less current* consumption.

Other signals having motor with solid cast iron fields require nearly 50% more current to the same power, and what is more to be noted is that your storage battery will be ruined by being forced to discharge more amperes than the capacity of the battery will stand. Ask the electrician and he will prove it to you.

The steel laminated fields will produce greater volume of sound at less expense and will lengthen the life of your battery—the shaft of the NEW MOTOR runs on imported ball bearings, and no oil or adjustment whatever is required

Type "M." Patented April 4, 1911. No. 988,537

NEWTONE
Type M
Price, $20

NEWTONE
Type N
Price, $18

Type "N." Patented April 4, 1911

The NEWTONE Horn has been so perfected that the harsh, disagreeable sound so common in other horns has been entirely eliminated.

Its tone is clear, sweet and musical, yet so powerful that it can be heard a mile away. *It warns without startling.*

Simple in construction, mechanically perfect, with a price 50 per cent. lower than any other [illegible]

Manufactured and guaranteed by the largest manufacturer of automobile horns in America—a firm that for the past 8 years has made, and is still making, over 80 per cent. of the horns now in use in the United States.

If your dealer does not carry the NEWTONE we will send you one on approval.

If not entirely satisfactory return at our expense. The NEWTONE is guaranteed for one year.

Automobile Supply Manufacturing Co. 220 Taaffe Place, near DeKalb Ave. BROOKLYN, NEW YORK

OhiO

Five Passenger Torpedo, Forty-G

$2500.00

Completely equipped, including electric lights.

THE HANDSOMEST CAR IN AMERICA

Car Buyers, ATTENTION!

The OhiO is the first car ever built at any price whose quality is so good that its maker dares and does give a written guarantee, warranting it for life against defective materials and workmanship.

Do you want the high quality and freedom from trouble that make that guarantee possible, together with power, speed, silence, low cost and ease of operation, beautiful style, and that at a price very little above cheap-grade cars? Then investigate the OhiO closely. It's a truly remarkable car in every way.

Dealers wanted in unoccupied territory

The Ohio Motor Car Company

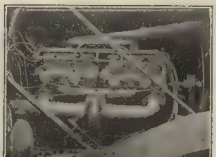
Cincinnati, Ohio, U. S. A.

STOP CRANKING!

Start Your Car from the Seat with the

AMERICAN GAS ENGINE STARTER

Press a Button on the Dash, and the Starter Does the Rest



The American Starter is the simplest starting device on the market. It consists of a small compressed air reservoir, a charging pump and carbureting cups, which replace the ordinary priming cups on the engine. It operates on the carbureter principle atomizing the right amount of gasoline for a starting charge and injecting it into each cylinder. Then the "spark" starts the car. Not sometimes, but all times. It can be used on all 4 and 6 cylinder cars.

It can be fitted to your car by any garage man or mechanic in four hours time. It will add less than 5 pounds weight to your car. A cold engine has no terrors for the American starter. It works with the temperature below zero, and infallibly will start your engine under any and all weather conditions.

An American starter makes it possible for women to drive the biggest cars—which they cannot crank.

Write Us To-day for Detailed Description and Cost of Fitting Your Car

Dealers and Garage Men:—You know there is a demand for a real starter. The American fills it. Get the agency for your section. Write us now for discounts.

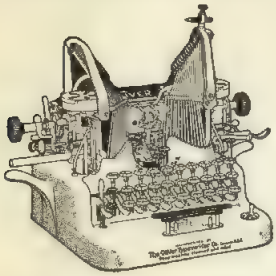
AMERICAN STARTER & CARBURETER CO.

1810 W. Madison St. **CHICAGO, ILL.**

17 Cents a Day

Buys an

OLIVER



SAVE YOUR PENNIES AND OWN

The OLIVER Typewriter

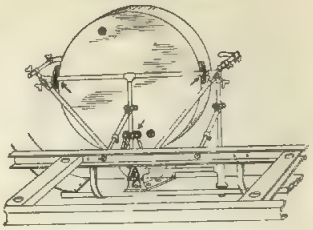
The Standard Visible Writer

Can you spend 17 cents a day to better advantage than in the purchase of this wonderful machine?

Write for Special Easy Payment Proposition, or see the nearest Oliver Agent.

The Oliver Typewriter Co.
WALNUT AND TENTH STS., PHILA., PA.

Strapless Tire-Holder and Trunk



The latest device for carrying Trunk and Tires.

NO MORE STRAPS OR BUCKLES TO BOTHER WITH.

TIRES CAN BE REMOVED IN FIVE SECONDS, WITHOUT REMOVING THE TRUNK.

THE HOLDER is made of steel tubing; the castings, extensions and arms of solid brass, highly polished.

The TRUNK is made of sheet steel, finely japanned, and has two ventilators, permitting free circulation of air through the Trunk.

Guaranteed for two years. Absolutely water- and dust-proof.

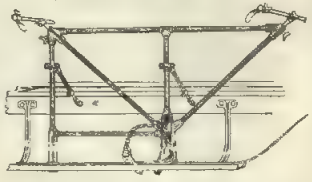
ADJUSTABLE to any size tires, demountable rim or plain.

When ordering, kindly state size of tires used.

Price, complete, for frame and Trunk,

$30.00

Write for Illustrated Catalogue.



Strapless Tire Holder & Trunk Co.
93 MERCER STREET, NEW YORK

AUTOMOBILE GOGGLES

IN LARGE VARIETY

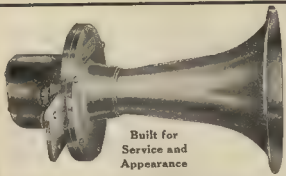
1912 CATALOG UPON APPLICATION TO ANY JOBBER

IN LARGE VARIETY

1912 CATALOG UPON APPLICATION TO ANY JOBBER

SUSSFELD, LORSCH & CO., Importers, and Manufacturers' Agents

PARIS 90-94 MAIDEN LANE, NEW YORK BERLIN



Built for Service and Appearance

ONEITA

The Signal of Satisfaction

A reliable electric signal with a loud, penetrating tone, requiring absolutely no attention.

There are thousands of these signals in use, giving perfect satisfaction.

The movement of one finger clears the way.

Price, $12.00 Liberal discounts to the trade

ELECTRIC HORN AND SPECIALTY COMPANY, Utica, New York

We have noticed that motor car owners use tire trunks which wear through at the bottom. If the presence of this hole is a matter of choice, we can make up the trunks in that way.

If it is because they do not know that a hole-proof tire trunk is on the market, let them kindly read this:—

A TIRE TRUNK GUARANTEED NOT TO WEAR THRU AT THE BOTTOM

THE S.C.S. No. 9 SOLID WOOD TIRE TRUNK—Revolving Door Style

Absolutely NO pasteboard, trunk board, sheet metal or fibre used in its construction. SOLID WOOD THROUGHOUT. FULLY GUARANTEED.

Improved 1912 model Waterproof Dustproof Indestructible

At your dealers or **S. C. SIMON & CO.** **1020 Race Street, Philadelphia, Pa.**

Expert builders of automobile trunks

CASTINGS

IN { ALUMINUM BRASS WHITE BRASS and BRONZES of all kinds

WE MAKE A SPECIALTY OF **CONTRACT WORK** OF ALL KINDS

PIONEER BRASS WORKS : INDIANAPOLIS, IND.

Paige Takes Three Firsts at the Auto Shows

Popular approval and satisfaction make the awards. The Paige still further increases its leadership among cars selling from $850 to $1,500—with no advance in price.

The Paige is the **first** popular price motor car to include a reliable *self-starter* as *regular* 1912 *equipment*. The Paige is the *first* in its field to adopt a *cork insert* multiple disc *clutch*. The Paige is the first popular price car to adopt the Delco system of ignition.

These refinements of construction have heretofore been confined to the higher priced cars. The driver of a 1912 Paige, man or woman, may start the car from the seat by the simple turning of a valve and the pressing of a button. He will have a clutch that always engages gently and effectively with no clashing or racking of gears—a clutch that can't slip, that won't grab or jerk.

THE value of the Paige 1912 line is still farther increased by the addition of the new model—the Brunswick, a large, comfortable five-passenger touring car. The whole family may ride in it. It has all the seat and leg room any motorist will desire for comfort. It is a touring car with more power under full load than is actually required for the worst of roads the steepest of hills. We make this statement because we have put the car to severer tests than any owner will.

Equipped as are all the six other Paige models, with *Delco ignition, Disco Self-starter, cork insert multiple disc clutch, enclosed valve power plant, the new Paige fire passenger, Brunswick model, sells for* $1,000. *The other six Paige models are listed below at* $1,000

For 1912, the valves are removed by two thumb screws. No dirt, no grit can get into the valves to shorten their wearing qualities. It makes the motor quieter and the Paige has always been noted for its quiet, sweet-running powerful motor

The transmission gears bear the right proportion of strength and size to the motor itself. They are made of Halcomb cut-to-size steel; find this specification among other cars. The bearings used in the transmission are imported R. I. Timken bearings. By an unheard of method you will find cheap roller bearings and bronze bushings in the ordinary transmission

Our crank shaft castings, made of gray iron, are allowed to season after boring, from ten days to two weeks before the cylinders are ground. This is a slow and costly process but it makes a perfect motor because it makes a perfect cylinder, one which will always stay true. You will not find this splendid practice provided in any other popular price factory—make your own inquiries

Before you decide on any make of car, examine the Paige, ride in it—drive it. You will be satisfied that it is the sturdiest, the most perfectly balanced and proportioned, the easiest riding motor car in the popular price car in the market. We have time to perfect it because the attention of our engineering department is concentrated on one chassis, one power plant.

THAT cork insert clutch should mean much to the owner of a car. In each of the five driving discs of cold rolled steel are 36 corks, projecting a bare 32d of an inch over the face of the disc. These operate against five driven discs of tempered saw steel. The entire clutch runs in a bath of oil. The corks take up all the jars to the mechanism of the car and transmit the full power of the motor to the driving wheels. Owners of cars in the $3,000 class who have used this type of clutch for several years agree that a cork insert clutch appreciably increases the power and life of the car

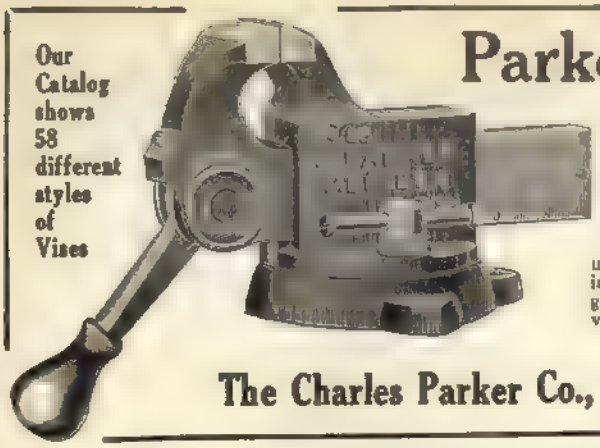
The power plant is absolutely the best in any car in the Paige price-field. It is made of sturdier higher grade materials. It is the only *completely accessible* power plant. There are side plates on both sides of the motor which may be removed in a moment with a wrench. Every part of the motor may be got at as it stands in the car

In New York City the Paige exhibit is at the Grand Central Palace, January 10-17th. The Paige will exhibit on the main floor of the Hotel LaSalle during the week of the Chicago show, January 27th to February 5th.

PAIGE-DETROIT MOTOR CAR CO.

301-311 21st St., Detroit, Mich.

Our Catalog shows 58 different styles of Vises



Parker's Quick Action Swivel Vise

Hardware stores report a large sale of this handy vise for quick work. The sliding jaw can be moved instantly to any position and the vise swivels so easily that difficult work is handled without the usual trouble and annoyance common to most vises. It is made of Semi-Steel and every part carries the Parker guarantee of strength and endurance. It's the favorite vise in thousands of work shops.

Send for Special Vise Catalog No. 5.

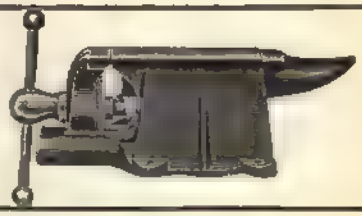
The Charles Parker Co., Meriden, Conn., and 32 Warren St., New York

SEMI-STEEL ANVILS

For farm or light shop use. Sell rapidly. Every dealer should have them in stock. Prices attractive. Ask your jobber.

ROCK ISLAND MFG. CO.
ROCK ISLAND, ILL.

Send for new catalogue of largest and most complete line of vises manufactured.



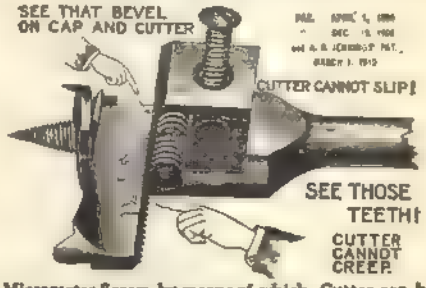
ARMSTRONG
MODEL B
PIPE CUTTER

MADE IN THREE SIZES

No. 1 Cutting from ⅛ to 1¼ inches
No. 2 Cutting from ⅛ to 2½ inches
No. 3 Cutting from 1¼ to 4 inches

Manufactured by
THE ARMSTRONG MFG. CO., 296 Knowlton St.
New York BRIDGEPORT Chicago

C. E. JENNINGS STEERS PATENT EXPANSIVE BIT



Note Micrometer Screw, by means of which, Cutter can be instantly adjusted to a Thousandth part of an inch.

C. E. JENNINGS & CO. Sole Manufacturers 42 Murray St., N.Y.

Veeder Straight Reading Speed Counter

Registers the exact number of revolutions per minute of a shaft, drum or wheel. Records speeds as high as 5,000 revolutions per minute. Non-magnetic. Rubber tips are provided for use with electrical machinery. The low price of $3.00 makes it a ready seller. Good profit to dealers. Try a dozen—you'll soon want more.

THE VEEDER MFG. CO.
37 Sargent Street
HARTFORD, CONN.

Represented in Great Britain by Mark M. Lt... City Road, ... bury Square, London, ... England; France by ... Market & Co., Ltd., 107 Avenue Parmentier, Paris, Germany, Austria-Hungary and Scandinavian countries, by Ludw. Loewe & Co., Hutten-Strasse 17-20, Berlin.

No. 157 Oliver Vise—Jaws 10"

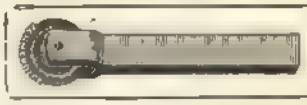
Wood Workers' Vises

Quick Acting. Largest Line Made!

"Oliver" Turn Table Planes, Hand Screws, Clamps, Etc.

Oliver Machinery Co.
30 Coldbrook St.
Grand Rapids, Mich.

New Catalog on Vises



Steel Roller and Press Stamps
Alphabets and Figures
Burning Brands, Metal Checks
The Schwerdtle Stamp Co.
Bridgeport, Conn.

TAINTOR POSITIVE SAW SETS

No. 7, well known in the trade. No. 8, new, has ADJUSTABLE HANDLE AND DOUBLE PLUNGER.
Send for full descriptive Circular

TAINTOR MFG. CO. 113 Chambers Street, New York

FORD'S

Special Steel and Patented Process of Tempering makes the FORD an Auger Bit of QUALITY

Manufactured by
FORD AUGER BIT CO., Holyoke, Mass.

When You Want Something

that can be supplied by a hardware merchant, salesman or manufacturer, advertise for it in the "Opportunity Exchange" of IRON AGE-HARDWARE. Send for rates and information.

IRON AGE-HARDWARE, 14 Park Place, New York

GEORGETOWN, CT. ESTABLISHED 1818 NEW YORK

THE GILBERT & BENNETT MFG. CO.

ARE MANUFACTURERS OF

Galvanized Wire Nettings **Galvanized Wire Cloths**

SOLE MANUFACTURERS OF

"Pearl" Wire Cloth and "Roman" Bronze Wire Cloth

THE GENUINE HAS COPPER SELVAGES

CHICAGO KANSAS CITY

MICHIGAN WIRE CLOTH CO.

ESTABLISHED 1864

EVERYTHING IN WIRE CLOTH

Pioneers of the manufacture of DOUBLE CRIMP WIRE CLOTH and WIRE SCREENING of every kind [illegible] Steel, Iron, Brass, Copper, Bronze Aluminum, German Silver, Galvanized and Tinned Wire, etc. Hardware Grades in Every Variety

ALSO WIRE LATH AND WIRE LOCKERS

Drawers of Brass, Copper, Bronze, German Silver, Nickel and Aluminum Wire

517 Howard Street, Detroit, Mich.

WRITE FOR CATALOG AND PRICES

"The Perfect" HEXAGON NETTING

GALVANIZED BEFORE WOVEN

The "Perfect" brand of Galvanized Poultry Netting, galvanized before woven, is made from selected steel wire of standard gauge, is heavily coated with refined spelter before it is woven, has three-strand twisted wires in selvage, is uniform in Mesh and Wire and accurate in length and width.

We carry a stock of all standard widths from 12 to 72 in.

Write to Dept. X for Catalog No. 41

THE LUDLOW-SAYLOR WIRE CO., St. Louis, Mo.

"GRISWOLD" FENCE

STRAIGHT STAY FIELD and POULTRY

The Only GUARANTEED Perfect Fence

BALE TIES BARB WIRE 66-ROD SPOOLS

THE GRISWOLD COMPANY STERLING, ILL.

WIRE NAILS 6 & G. WIRE DIAMOND FENCE

Branch—Station "A," Kansas City, Mo.

CYCLONE FARM GATES

Styles to suit all purposes. Strong and rigid in construction. No light weight materials used. Write today for catalog and 1911 discount.

THE CYCLONE WOVEN WIRE FENCE CO.

1227 EAST 55th ST., CLEVELAND, O.

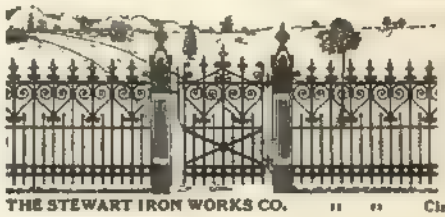
United States Horse Shoes

ARE MADE IN

ALL SIZES AND PATTERNS

SEND FOR LATEST CATALOGUE

United States Horse Shoe Co., Erie, Pa.



Iron Fence Gates

Lawn Vases Settees

General Iron & Wire Work

Ask for Catalog

THE STEWART IRON WORKS CO. Cincinnati, Ohio

NOW ON SALE

The Iron Age-Hardware Standard Hardware Lists

21st Edition Revised to Date

Over 300 Lists 218 Pages Cloth Bound, $2.00

DAVID WILLIAMS COMPANY - - 14-16 Park Place, New York

PETREL MOTOR CARS

THE CARS OF ABSOLUTE VALUE

PETREL TOURING CAR
Price, $1500, Complete

To own a PETREL car displays sound judgment in choosing something distinctly above the ordinary,—something that carries the impression of a knowledge of what is BEST in motor car construction.

PETREL CARS are in all ways cars of distinctive worth,—sturdy, substantial and powerful,—graceful and elegant in all their appointments, smooth, easy and economical in operation; lowest in first cost, considering power, quality and performance. The lightness, flexibility and great pulling power of the WAITE FRICTION DRIVE give the PETREL CAR unequalled ability to climb hills and negotiate bad roads.

Roadster	$1350, complete
Toy Tonneau	1500, complete
Touring Car	1500, complete

Get the full facts—inspect the models—have a demonstration!! Our catalogue is just brimful of interest,—write for it, to-day.

PETREL MOTOR CAR CO., 460-480 Virginia St., Milwaukee, Wis.

Body Makers,--ATTENTION!

Right here is Something Real Interesting

GARDNER ARTIFICIAL LUMBER

A cheap and durable substitute for wood, laminated boards and sheet metal.

SMOOTH, HARD and STRONG,—made of fibres, chemically treated and subject to hydraulic pressure.

¶ Made in large sheets up to 48" wide by 144" long, in thickness $\frac{1}{8}$" up. Will not split, buckle nor check,—takes a much better finish than natural wood or metal, can be bent to any curve desired and will retain its shape indefinitely.

¶ There is no grain, so it can be cut in any direction.

¶ Worthy? A trial is all we ask to prove this conclusively. It's quality is worthy your money.

¶ We will be pleased to supply samples and general directions for use upon application.

Gardner Artificial Lumber Co., - Barberton, Ohio

WE CUT ACCURATE METAL GEARS.

GEAR AND SPROCKET CUTTING is our specialty and this plant is second to none in facilities. No order is too large, too small or too difficult. Our decidedly modern equipment permits us to get out blanks and cut any kind of teeth at reasonable prices. Let us quote on your next requirements.

THE NEW PROCESS RAW HIDE CO.
SYRACUSE, N.Y.

Send for our 1911 Catalogue

"Nonpareil" Automobile Horns

Our exclusive styles, finish and quality are worthy of the name **"Nonpareil"** which can only be obtained by our up-to-date system and thorough knowledge of manufacturing.

The best Bulbs, Non-corrosive Reeds, Flexible Brass Tubing, Asbestos Lined, Speedometer Tubing any size or length.

Beware of substitutes and misrepresentations. Quality the Highest. Prices the Lowest.

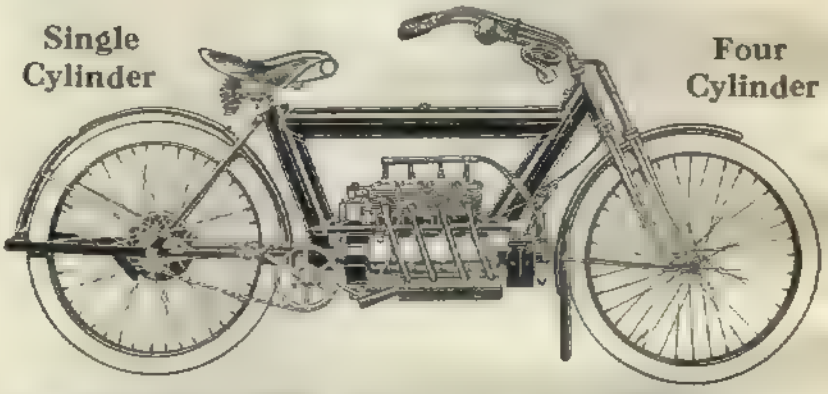
Nonpareil Horn Manufacturing Company

Removed to 73-75 Wooster Street - - - New York

(Sole Manufacturers of Nonpareil Automobile Horns.)

Be Forehanded
Order Now

Single Cylinder



Four Cylinder

PIERCE

THE demand for Pierce Motorcycles, both single and four-cylinder models, is such that we deem it well to call the attention of riders and dealers to the necessity of placing orders early.

Our Selling Policy

includes taking care of all established agencies in accordance with contract agreements, particularly as regards deliveries. We shall write a further limited number of these contracts,—dealers in unoccupied territories should negotiate with us at once to secure the revenue-producing Pierce agency. Our proposition is exceptional, and we shall gladly furnish it to any established dealer. Riders should order through dealers.

Ahead of the Others

Pierce Motorcycles are superior to every other motorcycle on the market. The 1911 improvements are numerous. Our completely illustrated and detailed catalog "E" should be in everyone's hands.

Also manufacturers of the "around-the-world" famous Pierce Bicycles

The Pierce Cycle Company

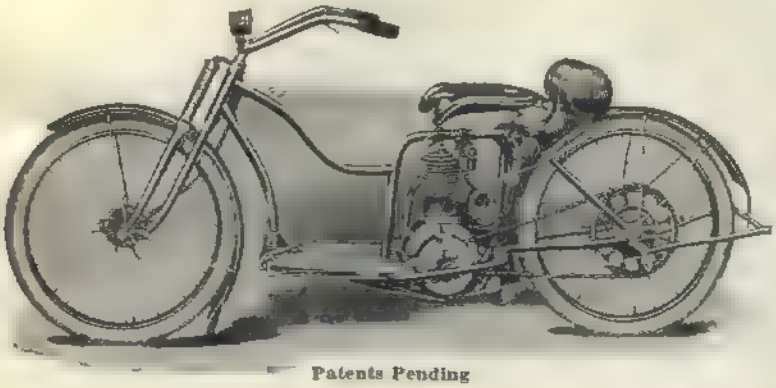
BUFFALO, N. Y.

Pacific Coast Branch, Oakland, Cal.

Your Ideals in Motorcycle Construction may be High,—but You'll Find Them Realized in the

New Era Auto-Cycle

"THE ZENITH OF MOTORCYCLE CONSTRUCTION"



Patents Pending

The New Era's experimental stage is passed,—and with the many new and novel features furnished with our 1911 Model, we offer to motorcyclists **just what they have been waiting for,**—a practical and durable machine, with a two-speed transmission and a free motor, operating just like an automobile, with added comfort in riding.

NEW AND NOVEL NEW ERA FEATURES

The Free Motor
The Ball-Bearing Motor
The Noiseless Motor
The Hand-Cranked Motor
The Two-Speed Transmission
The Foot Board
The Comfortable Form Seat
The Internal Expanding Brake
The Cushion Spring Fork
The Sixty-Two-Inch Wheel Base
The Elimination of the Pedals
The Magneto or Battery Ignition

The Greatest Hill Climber Built

DEALERS—Write for price list and our proposition. It is just brimful of interest. Write to-day,—now,—while you're thinking of it!

The New Era Auto-Cycle Company

9 DALE AVENUE, DAYTON, OHIO

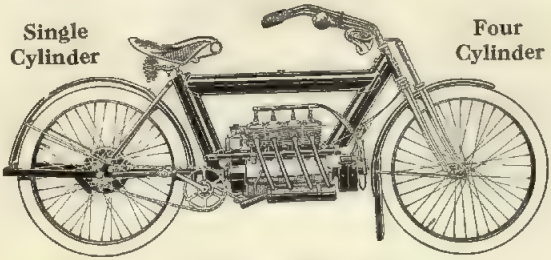
DISTRIBUTORS:

W. D. Andrews, 632 Main Street, Buffalo, N. Y.
The New Era Motor Company, 265 S. Broadway, Denver, Colorado.
The Auto-Motor Cycle Company, 2216 N. Broad Street, Philadelphia, Pa.
Morse Motor Sales Company, 1769 E. 55th Street, Cleveland, Ohio
Economy Cycle Supply Company, 57 Grand River Avenue, Detroit, Mich

IT'S TIME TO PLACE ORDERS FOR Pierce Vibrationless Motorcycles

Single Cylinder

Four Cylinder



PIERCE

The Pierce Arrow is always the trade-mark of exclusive quality, and never more so than for 1911. Pierce products give greater returns for one's investment than any other motorcycle on the market. You pay nothing for the Pierce name, reputation or factory facilities.

We offer two superb models: the single and the four cylinder. Both are well known to the trade because of previous years on the market, but it is an impressive fact that never before did our models fulfill and satisfy the demands of the most exacting motorcyclist under all conceivable road conditions as do the 1911 models.

The PIERCE SINGLE for 1911 stands ahead of all single cylinder competition in the vital elements of speed, hill-climbing, easy riding, durability and numerous "advanced" features of design.

The FOUR CYLINDER is strictly in a class of its own and is the finest motor vehicle on two wheels, offering to the rider all that modern skill and ingenuity can devise.

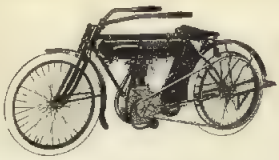
Our 1911 complete motorcycle catalog "E" should be in the hands of everyone interested in motorcycling. Write for it now.

Dealers should inquire for our exceptional proposition, "The Agency that Pays."

THE PIERCE CYCLE COMPANY, Buffalo, New York

Pacific Coast Branch, Oakland, California

YALE



4 H.P., Single Cylinder Motorcycle, Flat Belt and Idler, V Belt, Optional, $200. With Bosch Magneto, $235
F.O.B. Toledo, O.

EQUALLED BY FEW SURPASSED BY NONE

Ride a Yale **1911** They Never Fail

HOLDER OF THE WORLD'S RECORD FOR ENDURANCE, 600 MILES AT 20 MILES PER HOUR WITHOUT ONE ADJUSTMENT. RAN 132 HOURS WITHOUT FAN OR OTHER COOLING DEVICE, AND DID NOT OVERHEAT, DISPROVING ALL EXPERT OPINIONS.

New Models are being Delivered **Room for a Few More Live Ones**

Exhibiting at Space 713, New York Automobile Show, Jan. 16-21

THE CONSOLIDATED MANUFACTURING COMPANY

1710 Fernwood Avenue, Toledo, Ohio

Member M. M. A.

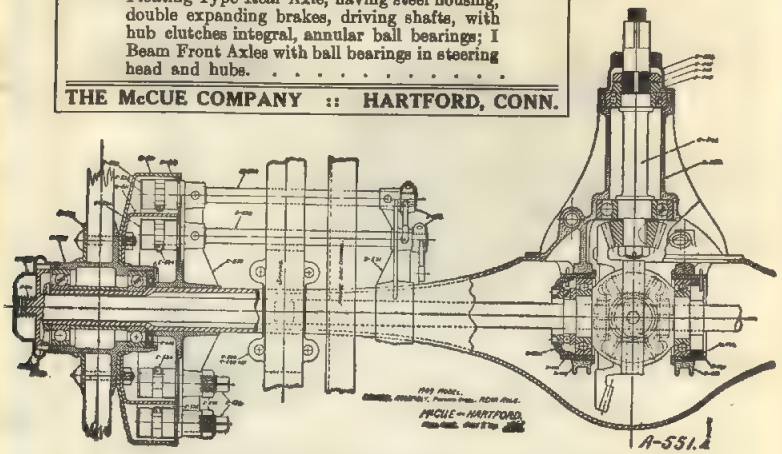
7 H.P., Twin Cylinder Motorcycle, V or Flat Leather Belt with Idler, Bosch Magneto, $300.
F.O.B. Toledo, O.

YALE

Automobile Axles

Floating Type Rear Axle, having steel housing, double expanding brakes, driving shafts, with hub clutches integral, annular ball bearings; I Beam Front Axles with ball bearings in steering head and hubs. . . . . .

THE McCUE COMPANY :: HARTFORD, CONN.



1910 PITTSFIELD 1910
High Tension Magnetos
(MADE IN AMERICA)

The man who uses a PITTSFIELD SYSTEM never gets in a tight place and sticks there for want of sufficient power from his motor. Any good motor can furnish the power if the mixture is properly ignited.

The PITTSFIELD MAGNETO gives the maximum efficiency of the fuel, the full power of the motor and increases the snap of the engine a hundred per cent

One-quarter turn of the crank with the timing lever fully retarded starts the motor equipped with a PITTSFIELD MAGNETO. Perfect timing is assured through the absence of small and delicate parts in the Distributor. Absence of coil troubles is obtained, since there are no moving wires. Primary and Secondary currents generated in stationary coils.

Magneto Spark Plug

All Pittsfield Systems are Trouble Proof. Write for Details.

PITTSFIELD SPARK COIL CO.
DALTON, MASS.

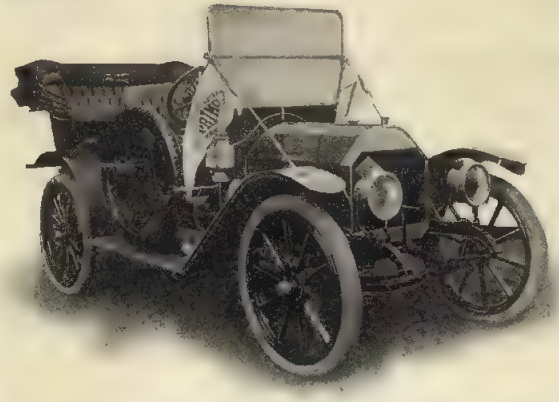
SALES REPRESENTATIVES: **New England States,** W. J. Connell, 36 Columbus Ave., Boston. **Atlantic States,** Thomas J. Wetsel, 17 West 42d St., New York. **Central States,** K. Franklin Peterson, H. V. Greenwood, 166 Lake St., Chicago; L. D. Bolton, 319 Hammond Building, Detroit. **Pacific Coast,** The Laugenour Co., San Francisco, Cal.

A full line of "Pittsfield" goods on sale by H. V. Greenwood, 166 Lake Street, Chicago

PRIMO

"The Southern Automobile"

4 Models - $1,250 to $1,750 - 4 Models



Model F. P. 11, 5-Passenger, $1,750. Fully Equipped with Bosch Magneto, Top, Windshield, Lamps, Horn, Tools, etc.

¶ The verdict of unbiased automobile men who have examined the chassis of the Primo and who have carefully looked over our body designs, is that we have a car of beautiful design, powered with a plant that will run and keep running They tell us that we are to be congratulated on having demonstrated that a Southern concern can produce a car equal to those made in the eastern and middle west auto-manufacturing centers.

¶ We built the Primo to anticipate Southern conditions; to travel smoothly over rough, hilly country and give a maximum of service at a minimum price. It is the car of correct proportions to operate at the lowest up-keep expense. Every moving part of the Unit Power Plant is encased yet easily accessible, even the valves, and no engine pan is used or required. It is equipped with Bosch High Tension Magneto, Schebler Carbureter, Multiple Disc Clutch, Shaft Drive, etc. 56 and 61-inch Treads.

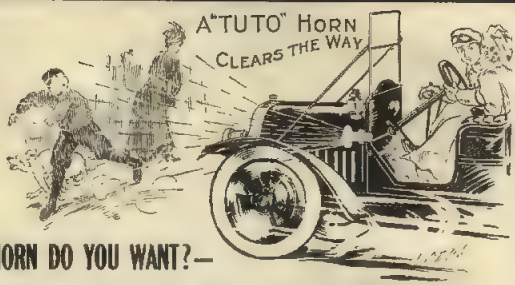
¶ *We have some desirable territory for live and aggressive agents.* IMMEDIATE DELIVERIES. *As we are now laying out the routes of our Road men, it would be wise to write us now.*

Primo Motor Company

Factory and General Offices
Ga. R. R. and Powell Street

Atlanta . . . . Georgia

Which-
Which-
Which-
Which-



KIND OF HORN DO YOU WANT?—

A Horn That Positively Clears Your Way Always

or one that merely makes a "noise" and causes you an endless lot of trouble, danger and expense—WHICH?

"TUTO" Horns are made on a common-sense plan,—two in one,—mild warning and forceful warning,—with one horn and one button. New and positive. Pleases all.

"Tuto" "Tuto"

Is an electric horn operated by a touch of the thumb, and is always ready instantly for every service. It never fails to act,—costs nothing to operate,—and can be installed in a few minutes by yourself. It convinces you itself, when seen and heard. Used by all particular motorists. WRITE FOR OUR FULL DESCRIPTIVE BOOKLET AND MOTORISTS' GUIDE. Sent FREE to all Dealers and Motor Owners.

Ask Your Dealer to See a "Tuto" Horn

THE DEAN ELECTRIC COMPANY

Taylor Street **Elyria, Ohio**

A HORN THAT WILL NOT BE HEARD BY THOSE IN YOUR WAY IS WORTHLESS

IN A "TUTO" HORN THE PEOPLE HEAR AND HEED

GET A "TUTO" HORN TODAY

RAYFIELD CARBURETER

Equipped Trucks Win in the Great Economy Test, Chicago to Detroit and Return, Nearly 800 Miles

By actual demonstration,—that's how the RAYFIELD proves its superiority over all other carbureters. Read these remarkable records!

MAIS, WINNER IN CLASS 7-K

The Mais Truck was Grand Champion among the winners, having the lowest cost per ton mile of any truck in the run, regardless of class or size.

Of the eight cars in Class 4-K, the average of the RAYFIELD-equipped cars was 25% less than the general average of the other six cars.

These figures have a tremendous importance to the Motor Truck owner and prospective Motor Truck purchaser.

The RAYFIELD CARBURETER puts an end to the unnecessary, extravagant consumption of gasoline.

NELSON-LE MOON WINNER IN CLASS 4-K

The Nelson-LeMoon truck consumed 53 gallons of gasoline, averaging 14½ miles per gallon for the entire run, carrying a load of 2,000 pounds, total weight carried, 5,500 pounds; cost per ton per mile, .0869, and used 11 gallons less than its nearest competitor.

LAUTH-JUERGENS IN CLASS 4-K

The Lauth-Juergens truck consumed 71 gallons of gasoline at a cost of $8.52; cost per mile, less tires, .0505.

The RAYFIELD means "MORE MILES PER GALLON,"—not in print but by day in and day out active service.

Your truck should be equipped with the best of all carbureters,—

The Rayfield Carbureter

Let us send you full information about this remarkable carbureter

FINDEISEN & KROPF MFG. CO.

21st and Rockwell Streets CHICAGO

Sales Dept., 1312 Michigan Avenue, Chicago, Ill.
Detroit Branch: FINDEISEN & KROPF MFG. CO., 997 Woodward Ave.
Eastern Representatives: SUMNER & DREYFUS CO., 1841 Broadway, New York

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Auto Supply Co., Milwaukee, Wis.
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20th Century Motor Car Supply Co., South Bend, Ind.
Waite Auto Supply Co., Providence, R. I.
Western Automobile Supply Co., Omaha, Neb.
Western Motor Supply Co., Minneapolis, Minn.
National Electric Supply Co., Washington, D. C.

THE MARMON

"The Easiest Riding Car In The World"

3700 Miles of Proof

That's the distance covered by the Marmon at an average speed of over 66 miles per hour, in winning the world's greatest list of victories.

This unequaled demonstration has proved beyond a doubt, the staunch reliability of Marmon construction combined with the perfect balance that insures luxurious comfort as well as economy of tires, fuel, oil and upkeep

Can you ask for greater proof of value than the fact that this demonstration compares favorably with those of the best and highest priced cars of Europe and America.

If you desire any further proof—go to the Marmon owner and learn of the value of his car in daily service.

Five body styles one chassis. Five-Passenger Touring Car—Four-Passenger Suburban—Two or Three-Passenger Roadster -$2,750. Also Landaulet and Limousine Models.

THE WORLD'S GREATEST LIST OF VICTORIES

International Sweepstakes Race—500 miles in 102 minutes, 8 seconds, establishing new world's records for 400 and 500 miles.

Cobe Cup Race—200 miles in 163 minutes, 29 1 seconds.

Wheeler & Schebler Trophy—200 miles in 150 5 minutes.

Vanderbilt—Wheatly Hills Trophy—189.6 miles in 190 minutes, 21 2-5 seconds *without a stop.*

Atlanta Speedway Trophy—200 miles in 182½ minutes *without a stop.*

Atlanta, A. A. Trophy—120 miles in 109 minutes 26 seconds *without a stop.*

Remy Grand Brassard and Trophy—100 miles in 80 minutes, 40.7 seconds. (The car which won first was disqualified later, giving the Marmon first and second.)

Remy Grand Brassard and Trophy—50 miles in 42¼ minutes *without a stop.*

Los Angeles Grand Prize—100 miles in 78¼ minutes *without a stop.* Breaking world's record regardless of class.

Two Hours Free-for-All—Los Angeles. 148 miles in 120 minutes *without a stop.*

Fifty Miles Stock Race—Los Angeles. 50 miles in 39 minutes, 55-55 seconds *without a stop.*

Hundred Miles Stock Race—Los Angeles. 100 miles in 83 minutes, 22 seconds *without a stop.*

Ascot Trophy—100 miles in 103 minutes, 14 1-5 seconds *without a stop.*

Ascot Fifty Miles—50 miles in 50 minutes, 16 2-5 seconds.

New Orleans Prize—100 miles in 107 minutes, 14 seconds *without a stop.*

New Orleans Fifty Miles—50 miles in 54 minutes *without a stop.*

Elgin, Kane County Trophy Road Race—170 miles in 184 minutes 46 seconds.

Vanderbilt Cup Race—Marmon second only 25 seconds behind the winner, a car 81¼ per cent. larger. 278.08 miles 256 minutes 23 seconds.

City of Atlanta Trophy Race—200 miles. 171 minutes 123 seconds.

Atlanta, Cocoa Cola Trophy Race—Marmon second. 100 miles. 87 minutes, 27.3 seconds.

Savannah Challenge Trophy—273.8 miles 243 minutes, 40 seconds. *Without a single stop. The longest non-stop race on record.*

Savannah, Grand Prize Race—Sixth. 415 miles in 390 minutes, 22 seconds.

Nordyke & Marmon Co.

INDIANAPOLIS, (Est. 1851) INDIANA

Sixty Years of Successful Manufacturing

"READING 40"

1912 Announcement

ONE CHASSIS THREE MODELS

Roadster, Touring Car and Fore-Door Touring Car

5 Passenger Fore-Door Touring Car, $1750, with complete equipment

Motor: 4 cylinder 5" bore 6" stroke, cylinders cast enbloc, actually developing 60 h p ; 122" wheel base, 36"x4½" tires. Double ignition system Pressed steel frame 6½" drop between axles, Front axle steel drop forging I beam section; Rear axle, full floating, both axles equipped with Timken Roller Bearings.

The Reading 40 has demonstrated by actual performance to possess every good quality of the world's best automobiles, in addition to which it embodies many advanced and original features in engineering design.

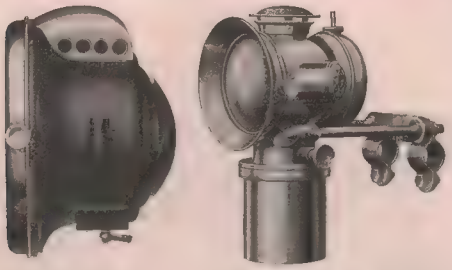
Speedy—Roomy—Strong—Handsome—Reliable—Comfortable

If you are looking for an automobile which represents full value, look no further.

We want progressive, responsible dealers to represent us in unassigned territory. Catalogue and full particulars on request.

MIDDLEBY AUTO COMPANY, Reading, Pa.

Roadster, $1650, with complete equipment



SELL SOLARS

The Lamps That Render Service

Here's a smashing good line of Motor Lamps that every dealer ought to investigate

Solar Lamps would sell on their looks. But that isn't what they are bought for They are bought because Solar Quality is known from one end of Motordom to the other—because folks know that the Solar Trade-Mark is a synonym for most satisfaction at least cost.

For this reason Solars sell easiest.

It would pay you to investigate the line. It is complete—the result of over 14 years' motor lamp building experience.

We make Motor Lamps, Electric Headlights, Limousine Lamps, Side and Tail Lamps, Combination Gas and Electric Headlights, Oil and Electric Side and Tail Lamps, Oil and Gas Motor Truck Lamps.

See the new Combined Motorcycle Headlight and Generator Lamp—what all Motorcyclists have been asking for.

SEND AT ONCE FOR THE SOLAR PROPOSITION

BADGER BRASS MFG. CO.
KENOSHA, WIS. NEW YORK CITY

Born July 4

Red Head

ON another auspicious occasion—March 4th, 1909—the RED HEAD Spark Plug was inaugurated [illegible] spark plugs on the market.

In two years of experience our engineers have learned a number of things watching the trend of gas engine practice and from personal contact with the brightest minds in the trade. The result is

The Red Head 1912 Model

which [illegible]

The new RED HEAD [illegible] grew [illegible] the shop of experience [illegible] RED HEAD

[illegible] 1912 [illegible] packing that takes care of expansion and contraction [illegible] will not crack [illegible] the RED HEAD [illegible] Also [illegible] the [illegible] and [illegible] Red Head [illegible] Diamond and other powerful sparking arts has contributed [illegible] RED HEAD Spark Plug.

We are now [illegible] Our only inducement is the best designed, best constructed and most efficient plug at a fair price

ALL SIZES ALL STYLES **$1.00** CONICAL OR PETTICOAT PORCELAIN AND MICA

EMIL GROSSMAN COMPANY, Mfr., 250 West 54th Street, New York

Branches: Chicago, No. 1436 Michigan Ave. Detroit, No. 874 Woodward Ave.

B. & L. CASTOR FRONT AXLE
Now in General Use

6 When turning, the front wheels turn on the ground on a perfet pivot

7: Car can be controlled in sand, rough or muddy roads, as easily as on a smooth highway

8: Car can be driven from a paved street into sand or rough roads at a high rate of speed, and will retain its course without a hand touching the steering wheel.

9: Any or all parts of the steering connections may become loosened and the car will continue in a straight course, thus allowing ample time to stop before an accident occurs

10: The axle rock, one wheel may be removed, leaving one wheel free and with the control of the other wheel the car may be guided in any direction

11: Absolutely no back lash or vibration upon the steering wheel regardless of road conditions.

12: Instead of side thrust into spindles and axles, the wheels roll into and over them

13: A car equipped with this axle cannot skid

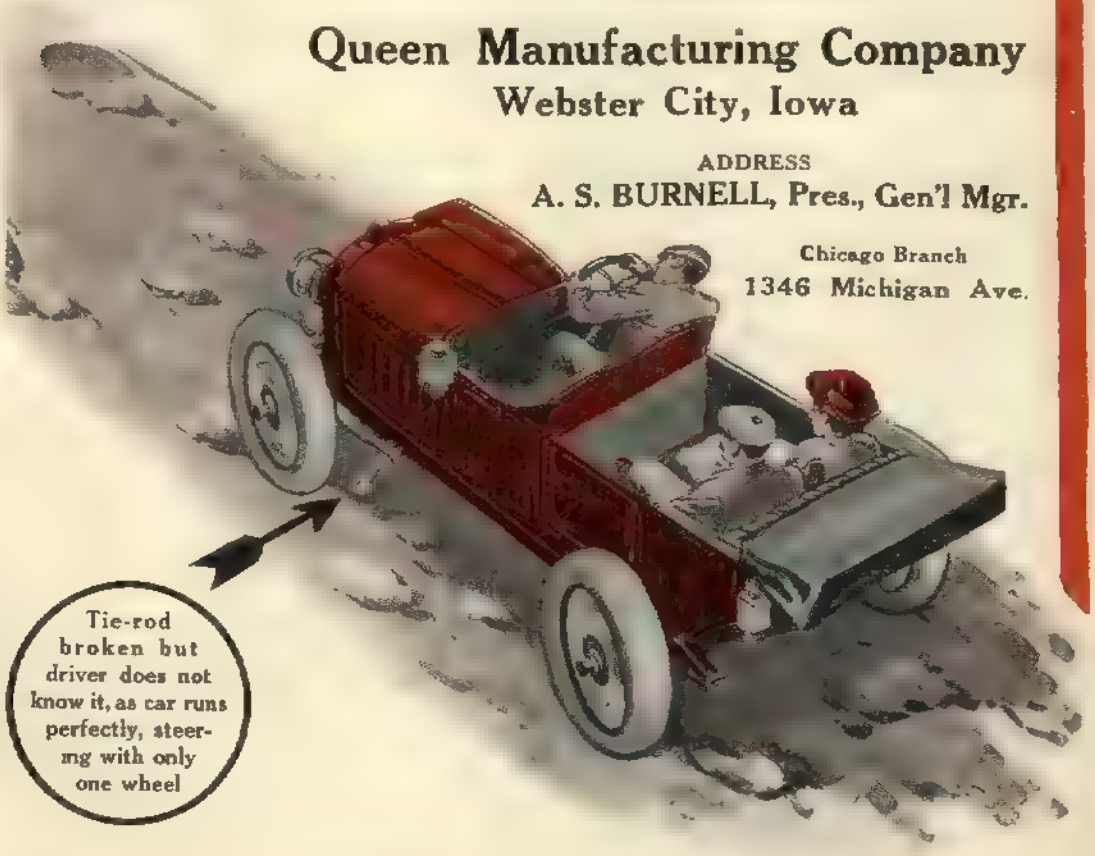
14: The king bolt or turning pin is located ¾ of an inch forward of the center of the axle and spindle so as to cause a perfect castor or eccentric front wheel

15: The weight of the car is on the knuckle instead of being transmitted through an outer point of suspension

16: The wheels are set perpendicular to save power and strain on the wheels while turning thus eliminating tire friction

17. Saves the wear and tear on the front wheels and tires as saved, as there is no side thrust or vibrating

18: The feeling of absolute safety and confidence as a form of life insurance which commends the approval of every occupant of the car



Queen Manufacturing Company
Webster City, Iowa

ADDRESS

A. S. BURNELL, Pres., Gen'l Mgr.

Chicago Branch

1346 Michigan Ave.

Reo Proof

Every Reo every year has proved itself good and plenty; but see what the 1911 Reo did—within two short months of its coming out!

Endurance Won the Kansas City Star Trophy in what proved to be the most strenuous and most complete test of a motor-car during the present year, against all of the best American cars. The highest road score, the highest mechanical score, without regard to price or class.

Won the Kansas Magazine Endurance Contest. Easily won in its own class, and had a better record than any car in any class.

Hill-Climbing Beat best previous record for Mt. Hamilton (24.5 miles) by 10 minutes. Reo time, 1 hour 5 minutes. Would have done even better but for dangerous rain and fog, making the road slippery and hard to see ahead.

Racing In a 50 mile race near Denver the Reo beat a Chalmers, well known for its racing record, by 10 minutes, making the distance over sandy roads in 57 minutes 43 seconds—an average of 51½ miles an hour. At the Empire City track race, on November 12, at Yonkers, New York, the Reo won the 10-mile race against much higher priced cars. Owing to heavy rains the track was heavy and sandy, but the Reo time was 13 minutes 52 seconds.

Across the Continent in 10½ Days The Reo beat the record of a $4000 six-cylinder car by nearly 5 days, making the trip in 10 days 15 hours 13 minutes. A wonderful performance!—Nearly 4000 miles, and half of it through deep mud and sand, trackless deserts, deep wash-outs, and mountains. And not a thing done to the Reo engine the whole trip except to change one spark-plug.

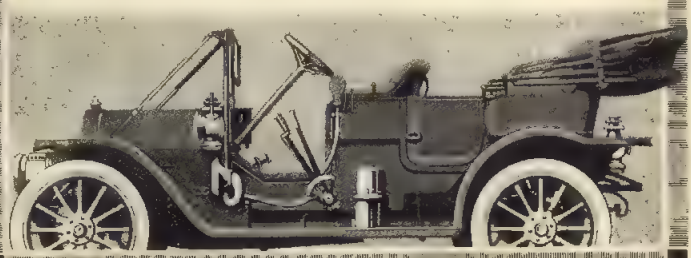
No other 1911 motor-car can show such records and proof. Here are four kinds of proof: power, speed, endurance, reliability. Is there anything else you want to know?

Write us. Send for Reo Catalogue. Also "Coast to Coast" in Ten Days

Reo Touring Car or Roadster $1250
Reo Limousine or Landaulet $2000

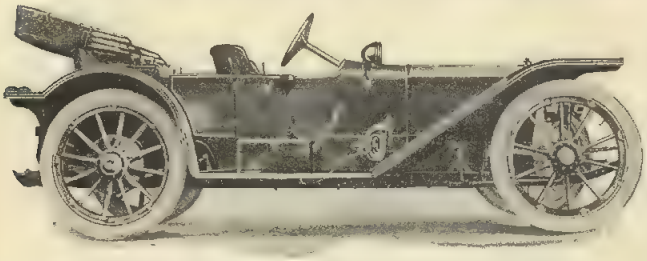
R M Owen & Co Lansing Mich *General Sales Agents for* Reo Motor Car Co

Licensed under Selden Patent



THE AMERICAN

A Car for the Discriminating Few



The Traveler—50 H. P., 40-inch Wheels—$4,250

¶ The larger and principal cities have furnished buyers for virtually all of the Americans we have made to date. Our cars have naturally made their strongest appeals to an exceptionally discriminating clientele.

¶ That just as discriminating folk are to be found in practically every other city in the land has been proved by a demand for allotments elsewhere which we have been unable, heretofore, to consider.

¶ Our manufacturing facilities will now permit a greatly increased output, to which we shall give as wide a distribution as possible.

¶ The American is so distinctive, the safety conferred by its underslung construction, its ample power plant, its high wheels and its literally straight line drive, make its agency especially desirable beause of the rapid growth of American colonies wherever the cars have been seen, tested and enjoyed.

¶ Of course, we shall use exceptional care in the selection of our new dealers, for we are now ready to place in the hands of the right man a complete line—a splendidly rounded business—which will instantly attract the most desirable patronage in his city. Write to-day.

In the nine models for 1911 are to be found these especially popular cars:

Traveler,	**$4,250**	**Roadster,**	**$4,250**	**Tourist,**	**$4,250**
Traveler Special,	**5,000**	**Roadster Special,**	**5,000**	**Limousine,**	**5,250**

American Motor Car Company, *Dept. U.*, **Indianapolis, Ind.**

Licensed Under Selden Patent

BALL PLANETARY

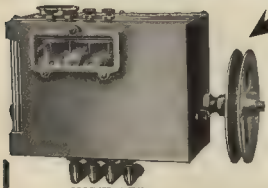
TRANSMISSION

GEARS

for AUTOMOBILES and COMMERCIAL VEHICLES

Generated Spur Gears made to blue print.

NEW YORK BEAR WORKS, 56 GREENPOINT AVENUE, BROOKLYN, N. Y.



MODEL "F"

"BUFFALO"

FORCE SIGHT-FEED

OIL PUMPS

DO NOT DISAPPOINT

WELL DESIGNED
THOROUGHLY CONSTRUCTED
FORCE-FEED FROM TANK TO MOTOR

Manufactured by

Sherwood Manufacturing Co.

BUFFALO, N. Y.

Write Department "C" for Catalog

Republic "Classiest of all"

A car designed and built for discriminating buyers who want quality and class.

Artistic Lines Luxurious Appointments—Mechanical Perfection

35-40 H. P., T Head Motor, 120 inch Wheel Base, Double Ignition. Fully equipped with Warner Speedometer, Mohair Top, Windshield, Solar Lamps.

PRICE, $2250.00

FIVE-PASSENGER TOURING CAR

THE REPUBLIC MOTOR CAR COMPANY, HAMILTON, OHIO

We have some good territory open for high-grade established agents

Triple Tread Your Tires

Three years successful service have put the Triple Tread in a class by itself—**"The only steel studded leather tread applied on your casing by a Steam Heat Vulcanizing Process."**

Chrome Leather, reinforced with steel studs, is the only thing tough enough, water-proof and pliable enough to make a better and more economical tire tread than rubber.

Three piles of the right kind of leather applied in the only right way —Guaranteed to protect your tires from **cuts, punctures, bruises, etc. Guaranteed Skid-Proof.**

TRIPLE TREAD MANUFACTURING CO.

1547 Michigan Ave., Chicago 547 Van Ness Ave., San Francisco 52 Gerlie St., Winnipeg

Don't Wait Till Your Car is Stolen

Protect it with an

Automatic Lock Switch

The switch with a YALE lock. The key is your plug.
To Start—Simply insert key and turn
To Stop—Turn key to neutral
To Lock Car—Withdraw key

No Extra Operations. No Padlocks. No Chains. No Bother.

Can be attached in five minutes. No change in wiring.
Price $5.00—Money back guarantee
Give name of car and ignition system.

BLACKBURN SPECIALTY CO.
1405 W. 3rd Street Cleveland

VULCANIZERS

A complete line of Sectional, Inner Tube, Retreading and Inside Patch Vulcanizers.
Our asbestos treated AIR BAGS last longer than ordinary air bags of other makes.
We also manufacture a full line of high-grade TIRE REPAIR MATERIAL.
Our prices are considered very reasonable by our large number of customers.
Write for catalogues.

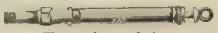
THE O'NEIL TIRE & PROTECTOR CO. AKRON, OHIO

Horns Horns Horns

ALL STYLES FOR AUTOMOBILES MOTORCYCLES BICYCLES

ALSO FLEXIBLE TUBING, AUTO MIRRORS and other SPECIALTIES

NIGHTINGALE WHISTLES



We are sole manufacturers

DEALERS:—Get our price list and interesting proposition.

THE RILEY-KLOTZ MFG. CO.
17 Mulberry St. Newark, N. J.

MODEL A and S
Black Japanned, Brass and Nickel Rims, or Complete Nickel Plated Finish.

PHINNEY-WALKER KEYLESS CLOCKS

(To wind turn the rim)

Seth Thomas, high-grade, seven-jeweled movements. Will keep excellent time and are built to stand use and abuse in automobile service.

SEND FOR CATALOG

Phinney-Walker Keyless Clock Co.

81 East 130th St., : New York

$700

F.O.B. Detroit
Fully Equipped

R C H

Long Stroke Motor
Three Speeds
Enclosed Valves
Bosch Magneto

We Want Dealers For R. C. Hupp's New "Twenty-Five"

In the new "R.C.H." Twenty-Five, Mr. Hupp has produced a car that has no rival below the $1500 class of cars.

Over half the 1912 output of 5000 cars has already been snapped up by progressive dealers.

Some very desirable territory is yet open however. Interested dealers are urged to get in touch immediately with our nearest branch.

SPECIFICATIONS

MOTOR—4 cylinder, 3¼ inch bore, 5 inch stroke. Cylinders cast en bloc. Two bearing crank shaft. Timing gears and valves enclosed. Three point suspension.

DRIVE—Left hand. Irreversible worm gear, 16 inch wheel.

CONTROL—Center lever operated through H plate, integral with universal joint housing just below.

SPRINGS—Front, semi-elliptic; rear, full-elliptic and mounted on swivel seats

FRAME—Pressed steel channel.

AXLES—Front, I-Beam, drop forged. Rear, semi-floating type.

BODY—English type, extra wide front seat.

WHEEL BASE—86 inches.

TIRES—30 x 3 inches all around.

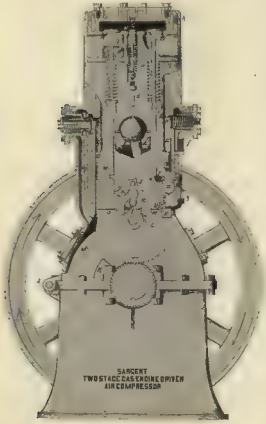
Full equipment includes top, windshield, gas lamps and generator. Equipped to carry 4 passengers—$750.

102 Lycaste St. **HUPP CORPORATION** **Detroit, Mich.**

BRANCHES:—**Buffalo**—1225 Main St. **Chicago**—2615 Michigan Ave. **Cleveland**—1992 E. 13th St. **Denver**—1620 Broadway. **Detroit**—Woodward and Warren Aves. **Kansas City**—3401 Broadway. **Los Angeles**—816 S. Olive St **Minneapolis**—1334 Nicollet Ave. **Philadelphia**—330 N. Broad St. **Boston. Atlanta.**

SARGENT TWO STAGE GAS DRIVEN AIR COMPRESSOR

To meet the demands for a self-contained, gas driven air compressor, the machine shown herewith was brought out. It consists of a vertical gas engine with a differential trunk piston, the annular space around it being used for compressing the air. As there is but one piston, one connecting rod and one crank shaft for both the gas engine and compressor, the combined efficiency of the unit is necessarily high.



Sargent Air Compressor.

On the up stroke air is drawn into the crank case through the port K, when it registers with the corresponding port on the crank disc J. On the down stroke air is compressed in the crank case and flows through the valve E into the annular chamber made by the differential piston. On the return stroke this air is forced through the discharge valve H and outlet I to the storage tank or receiver, during which time the crank case is again filled. On account of the large surface surrounded by cold water and the short distance the heat has to travel when generated in the annular space by compression, the thermal efficiency should be higher than in compressors having small cooling surface per unit of volume.

As the upper end of the connecting rod is a large steel ball, the piston and rings may revolve at will, maintaining a uniform and minimum wear of cylinder. The engine proper is of the four cycle type, and as air is compressed every stroke the two fly wheels and crank discs are made heavy to maintain a sufficiently uniform speed.

An inertia governor S, falling slower than the spring seated exhaust valve B when engine tends to run above normal speed, allows U to engage V, holding the exhaust valve open and the inlet valve stem W in such a position that X will miss Y, and the inlet valve will remain closed. When the speed drops U will miss V and the engine will resume its normal operation.

Either gas, gasoline or kerosene are used for fuel. When gas is used it is admitted through a graduated valve to the space R, from which it flows to the explosion chamber C with the air when the collar Q on the admission valve stem rises. Gasoline or kerosene are taken in through a mixing valve on the air pipe.

Compressed air which the engine compresses, is used from a storage tank for starting through the valve N, positively opened at the beginning of each working stroke as long as compressed air is turned on and the pressure is greater than in the explosion chamber. The crank pin is accessible through the hand hole plates, or the piston rod and crank may be adjusted or removed by turning back the cylinder on a hinge. One sight feed oil cup lubricates both ends of the piston. The superfluous oil gathered by the narrow groove in piston is delivered through diagonal holes to the ball and passing half way around flow through a hole in connecting rod to crank pin. The main bearings are lubricated by heavy grease, which also makes an effectual air seal. Ignition is by jump spark when the primary circuit is closed once in two revolutions by a pin on secondary gear.

Compressors of this type will compress air to 200 lbs. gage or to any lower pressure at which unloader is set.

One cam controls both admission and exhaust, and the valve motion is quiet, positive and so proportioned that it will run continuously for months without adjustment. Compressors are made in four sizes to compress from 9 to 150 cu. ft. of free air per minute.

These compressors were designed by C. E. Sargent, M. E., 136 West Lake St., Chicago, Ill.

LATOLIAN COMPANY HAS NEW GOODS

The Latolian Company, of Clinton, Ia., is placing upon the market three new specialties. Its "Carbon" is a carbon remover which is claimed to be unusually effective. "Shine-On" is a specially fine body, fender and hood polish, while H-O-D Metal Polish is for the brass work. H-O-D Hand Soap quickly cleans the hands, no matter how dirty they may be.

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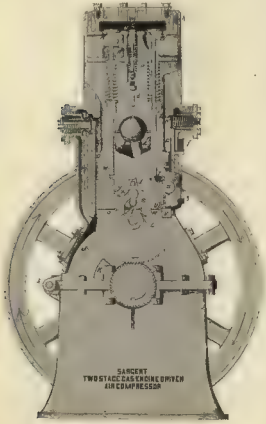

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A SCHWARZ WHEEL

on a car is the same as the sterling mark on silver. It stamps that car with the earmark of quality and reliability.

THE SCHWARZ WHEEL is not sold to the manufacturer who makes price the first consideration, but to the car builder who insists on quality above everything else. And these careful manufacturers are the ones who have made world-wide reputations for their cars.

The material that goes into the SCHWARZ WHEEL is carefully selected from the finest stock. The design and construction are the results of years of careful study and experimenting. It is the only wheel with absolute spoke support. The spokes at the tenons are grooved and mortised for interlocking, and are put together at one time under pressure. Just consider how much additional strength and trueness this construction gives to the wheel. They can never work loose under the most severe strain. Can be made complete and shipped without hub.

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Schwarz Wheels are on all the leading Motor Cars.

We design and proportion wheels in proper keeping with other features of construction—Consult us.

Here is an opportunity for you to stamp your car with that mark of reliability—specify

SCHWARZ WHEELS

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THE SCHWARZ WHEEL COMPANY

Frankford, Philadelphia

IRON AGE HARDWARE

Published every Saturday by the David Williams Company

NEW YORK, CHICAGO, CLEVELAND, CINCINNATI, PITTSBURG, PHILADELPHIA, BOSTON, SAN FRANCISCO

VOL. LXXIX No. 8 FEBRUARY 25, 1911

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WHITE MOUNTAIN FREEZER

is never DEAD STOCK; the earlier you display it the greater your sales.

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A CAR of beautiful appearance and faultless performance greatly enhances the pleasures of motoring. Speedwell cars are the center of admiration in any company. Speedwell owners take keenest satisfaction in their ability to maintain a leading position with all road users.

The Speedwell combines all the qualities that a good car should possess.

A Surprise

Besides our regular models we will exhibit at the Madison Square Garden Show in New York a new and novel body design that will be the sensation of the show. Be sure to see it.

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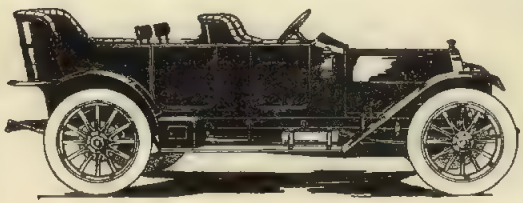
The Speedwell Motor Car Company

Dayton, Ohio



9/10's OF ALL IGNITION TROUBLES ARE CAUSED BY

wrong magneto lubrication or lack of it. The whitest, highest priced cylinder oil on earth is not good enough for even the cheapest magneto.

Because all cylinder oils—all every one of them are mineral oils. And there never has been and never will be a pure mineral oil made that won't gum, harden, dry out, collect dirt and clog delicate action points and bearings.

Clogged bearings start 9/10's of all ignition troubles. Don't take our word for this. Scoff all you wish. But just ask the manufacturer of your magneto or commutator.

"OILRIGHT" WITH "3 IN ONE"

3 in One is a clear oil compound of the highest known quality. It is used the world over for lubricating the most delicate mechanisms Swiss watches, costly scientific instruments, fire-arms, speedometers, commutators, etc.

3 in One absolutely will not gum or harden in any magneto under any condition whatever never.

3 in One will not dry out in ball bearings or ordinary bearings.

3 in One will not heat up, smoke or burn at any rate of speed—not even 5000 revolutions per minute.

3 in One is a free flowing, penetrating oil with the right viscosity for any make of High Tension or Low Tennon magneto. Will clean out bearings and keep them clean.

3 in One will also clean and polish your car — body — top — cushions — all wood, leather and nickel parts; also prevent tarnish and verdigris on brass parts.

FREE Make a trial at our expense. Send to-day for a generous sample of this great oil compound and learn for yourself exactly what it will do. Special magneto bulletin giving full details also free. ¶ 3 in One is sold by all supply dealers, sporting goods stores, hardware stores, etc., everywhere. Sold only in bottles like illustration — never in bulk. Three sizes, 8 oz., 50c — 3 oz., 25c — Trial size, 10c.

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Please send me immediately generous sample of 3 in One Magneto Oil and Special Magneto Bulletin without cost or obligation.

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57 BROADWAY, NEW YORK CITY

THERE is no car in America that is better built in any feature, that is more adequate in power, more thorough in its auxiliary equipment, or more complete in those factors which make for luxury than the SPEEDWELL. All cars with the exception of Models "H" and "J" 2 passenger Roadsters are fully equipped; as indicative of Speedwell completeness, we mention this standard equipment:

Self-starter, full cape top with storm curtains and boot, glass front, Prest-O-Lite tank and full lamp equipment, demountable rims, extra rim and holder for spares, foot rail, robe rail, complete tool kit, repair kit, etc., etc.

Send for catalogue and supplementary literature.

The Speedwell Motor Car Company
Dayton, Ohio

Speedwell

"We'll be all right now; I've got some POLARINE."

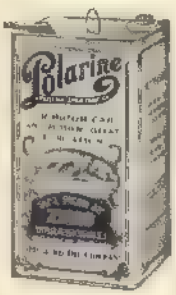
Next to your choice of a car, your choice of a lubricant is the most important thing. Poor lubrication will ruin the best car in the world.

POLARINE is the oil on which you can always depend for efficient service.

CARBON PROOF **Polarine** FROST PROOF

Polarine meets every fair demand that can be made on it, no matter how severe. It never thins out and loses its body.

It makes your motor deliver every possible ounce of power, with lessened friction and wear.



It puts an end to your troubles with carbon deposits on cylinders, valves and spark-plugs.

What Polarine Oil is to the motor, Polarine Transmission Lubricants and Polarine Greases are to the other wearing surfaces of your car.

FULL EFFICIENCY. ABSOLUTE UNIFORMITY.
PERFECT LUBRICATION

Send for the Polarine Booklet to the nearest agency of the

Standard Oil Company
Incorporated

Soap is Cheaper Than Paint

It only takes one application of the wrong kind of soap to send your car on a premature visit to the paint shop. And premature visits come high.

Listen—it takes about 15 coats of paint and days of hard work to build up the high polish on an auto body. What a crime you commit then against your car when you use a soap that eats off those 15 coats in one bite.

"Buckeye Cleanser"

Preserves the Finish

It actually DOES. It's a pure linseed oil soap—lathers freely—removes dirt, grease and grime quickly and restores the luster. Best of all, it's strictly neutral. Harmless as clear water. Not even a trace of alkali in it. The linseed oil properties of the soap give the surface the life it needs to keep the paint from cracking and prolong the life of the finish.

Sold in Six Different Packages

"Buckeye" is put up in 6 different size packages to suit the car owner who only wants a 5 pound pail as well as the garage that buys by the barrel.

5 lb. pails		Kegs,	125 lbs.
10 " "		Half bbls.,	225 "
25 " "		Barrels,	450 "

Sold by all leading garages and supply houses.

To the Car Owner

We want you to try "Buckeye." After you do, you'll never be satisfied with any other soap. You'll see at once the difference between "Buckeye" and the ordinary kind. Ask your dealer for "Buckeye." If he doesn't carry it in stock, write us—we'll see that you are supplied by the nearest dealer. Don't take a substitute, it's too dangerous. Insist on "BUCKEYE."

A Word to Dealers and Garages

"Buckeye" will cut down your soap bills by doing more work, pound for pound, than any other. We want to see you using it in your own garage. There's a good business to be had, too, on the small pails in every locality.

The J. P. Davies Co., Dayton, Ohio

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A Starrett Quality Tool

This Starrett Scraper exactly fills the demand for a strong, durable scraper, easy and handy to operate.

The head of best quality sheet steel is ribbed to increase stiffness. A universal joint connects handle to the head—permits adjustment at any angle for scraping corners. Each blade—removable—has eight cutting edges. It is quickly and easily clamped in the head ready for action.

Be sure to meet the demand for scrapers with No. 181. Its satisfaction is positive.

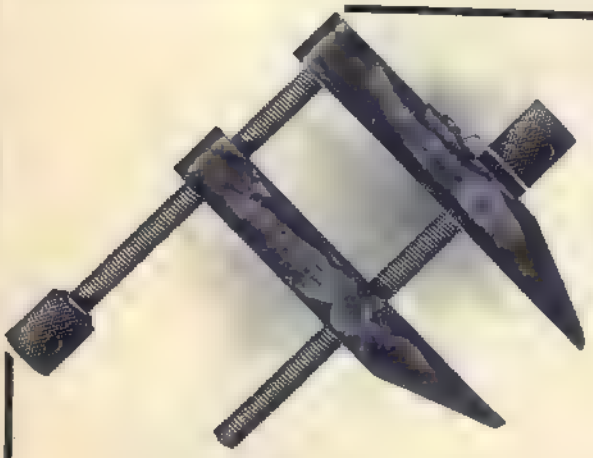
Our Catalog No. 19A fully describes this and other Starrett tools. Write for it.

THE L. S. STARRETT CO., Athol, Mass., U.S.A.

NEW YORK
132 Liberty Street

CHICAGO
17 No. Jefferson St.

LONDON
36 & 37 Upper Thames St., E. C.



Rigidity—a feature you can talk about in

B & S Toolmakers' Clamps

With or Without Spring Attachment

Unless a clamp holds the work firmly under all circumstances, it is useless. These clamps are rigid, a condition secured by having the screws fit sufficiently tight to obviate any play and of comparatively fine pitch to furnish ample leverage.

Those made with a spring attachment to hold the sliding jaw firmly in place are known as the IMPROVED TOOL MAKERS' CLAMPS. The spring is a feature readily appreciated by the man who has to clamp a large quantity of pieces of one size, as it holds the jaws firmly at the proper position for removing and inserting each piece.

Why not carry the two styles?

WE PROTECT THE DEALER

BROWN & SHARPE MFG. CO.

PROVIDENCE, R. I., U. S. A.

THE WILLIAMS PRINTING COMPANY, NEW YORK

HOW THE STEWART Precision Carburetor

Eliminates Carburetor Difficulties

Trouble

"Automobile" Magazine says: When the carburetor becomes unruly the trouble may be:

a —Nozzle too large.
b —Nozzle too restricted.
c —Needle in nozzle not properly set.
d —Depression too low.
e —Depression too high.
f —Too little initial air.
g —Too much initial air.
h —Too much auxiliary air.
i —Too little auxiliary air.
j —Float too high.
k —Float too low.
l —Passageways stopped up.
m —Air locked.
n —Pocket of water.
o —Float punctured.
p —Mechanical interferences.
q —Leak around manifold flanging.
r —Adjustment awry.
s —Filter stopped up.
t —Low pressure.
u —Control system awry.
v —Carburetor too small.
w —Carburetor too large.
x —Manifold not right.
y —Poor gasoline.
z —Gasoline not turned on.

Less Trouble

Note the difference if the Stewart Precision Carburetor is used, as follows:

a —Impossible; no nozzle used. We simply
b —use a tube many times larger than the required capacity.
c —No needle in nozzle.
d —Impossible, as depression is a constant fac-
e —tor and not dependent on form of passage.
f —Initial air absolutely constant and not ad-
g —justable.
h —So-called auxiliary air not used, the air all
i —entering at one point.
j —The float level is unimportant, as the as-
k —pirating point is many times higher than the thickness of float.
l —Not likely, as they are straight and very large.
m —This pertains to the supply pipe.
n —Large settling space in Bowl, but might be possible.
o —Impossible. We use cork float purposely.
p —Impossible. No mechanical connections, only one moving part.
q —Possible.
r —Not likely, as adjustments are very simple, but possible.
s —Possible.
t —Possible.
u —Possible.
v —Possible.
w —Possible.
x —Possible.
y —Not likely, as we can use a very heavy fuel.
z —Possible.

Out of 26 named possible "troubles" found in the average carburetor, no less than 14—over half—are done away with entirely if the Stewart Precision Carburetor is used. Some of those remaining are comparatively unimportant; and some do not apply to the carburetor at all.

Isn't This the Carburetor You Want?

MANUFACTURED BY

Alfred C. Stewart Machine Works, 1008 Santee Street Los Angeles, California

NEW YORK BRANCH:
FILLMORE CONDIT, Mgr., 17 Battery Place

CHICAGO REPRESENTATIVE:
L. S. SNOW & CO., 256 East Madison St.

ATTENTION! Motor Car Builders!

Manufacturing Details Relieved Product Improved

We specialize in the production of machine parts, such as

Pistons, Piston Rings, Piston Pins, Motor Gears, Transmission Gears, Hardened and Ground Parts.

All to your specifications where required. We offer you a better product at a consistent price and help you out with your manufacturing details.

Try us on Helical Cut Motor Gears and let us solve the motor gear problem for you.

Bearing Troubles Eliminated

Our improved system of die casting and the use of only the highest grades of bearing metals enables us to offer you a die cast bearing proposition of superior merit.

We furnish die cast bearing bushings to your specifications in any of the high-grade motor babbitts or Genuine Parsons White Brass.

Will You Send us Your Blue Prints for Estimates?

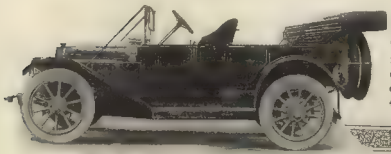
Garage Labor Lightened

FOR THE GARAGE

Designed especially for garage use, our line of Belt and Motor Drive Air Compressors, for tire inflating and cleaning purposes, lighten labor in the garage and save you money. Single and Three cylinder styles.

A post card brings a circular.

The F. W. Spacke Machine Co.
INDIANAPOLIS, IND.



7-Passenger Torpedo
The model that is winning more favor than any other 1912 Torpedo body on the market.
45 H. P. Price, **$2,250**

Every Self-Starting *Glide* Car is Built For 5 to 7 Years' Service

5 Years

7 Years

YOU know it to be a fact, that the high-priced car is designed for the car-a-year owner. The low-priced car for the owner who will say the second year: "Well, I guess I got my money out of it. Only paid ooo."

Glide Cars are built for *5 to 7 years' service*. We don't figure to sell the 1912 buyer a 1913 car next year. Glide Cars never were created to satisfy the fashion-vanity of the car-a-year craze. We *purpose* the *luxury*, the *style*, the *efficiency* of Glide Cars to make good to a substantial clientele season after season. And there are *fifty demands* for the long-service car *today* to every demand for the one-year car.

Let Us Send You the 1912 *Glide* Catalog

with complete specifications on our entire line—

45 H. P. 7-Passenger Fore-Door Touring Car,	$2,000
45 H. P. 5-Passenger Torpedo	2,150
45 H. P. 7-Passenger Torpedo	2,250
45 H. P. 2 or 4-Passenger Scout	2,000
Commercial Delivery Wagon	2,000

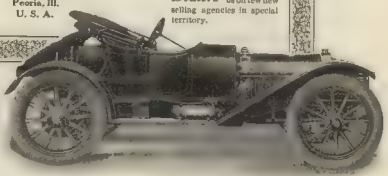
The *Glide* Guarantee

Glide owners are insured by a Guarantee *more liberal* and *wider in scope* than any other Automobile Guarantee issue

THE BARTHOLOMEW COMPANY

210 Glide Street
Peoria, Ill.
U. S. A.

Dealers Consult with us on few new selling agencies in special territory.



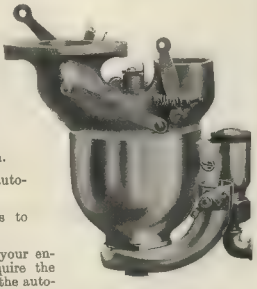
2-Passenger Scout
Light, strong, roomy. Easy riding, perfectly balanced, extra long wheel base. Luxuriously equipped, stands alone in its field.
Price..... **$2,000**

MORE POWER

Than You Actually Need

You may not care to travel at the rate of sixty miles an hour, but there is a whole lot of satisfaction in knowing that you have plenty of reserve power in your engine. Stiff hills and that other fellow "nosing" up alongside of you have often made you "cuss" that poor mixture.

THE CHAPIN CARBURETOR



Mechanically Accurate

Is entirely mechanical in operation.

No uncertain action of so-called automatic parts.

Contains no mechanism that fails to work.

The Chapin Carburetor will make your engine respond *instantly*, does not require the vacuum necessary in the operation of the automatic carburetor, thereby giving you more horse power and a wider range of speed. Enables you to control your car by the throttle, eliminating all wear and tear from continuous shifting of gears.

The construction of the CHAPIN CARBURETOR does away with the extremely delicate mechanisms that are continually getting out of order in other types of carburetors. The parts are of simple design and built as sturdy as the frame of your car.

Everything is under mechanical control. The air enters the carburetor through two intakes. A fixed air intake is provided through a venturi tube which draws the fuel into the mixing chamber from a MECHANICALLY CONTROLLED needle valve. An Auxiliary air current enters the mixing chamber at right angles with the suction current. This auxiliary current is MECHANICALLY CONTROLLED by the throttle.

Too much stress cannot be applied to the importance of the MECHANICALLY CONTROLLED parts in the Chapin Carburetor for by reason of this operation the failure of the so-called automatic parts is entirely done away with. These MECHANICALLY CONTROLLED parts will stay in adjustment, will never fail to work, will not "load" your engine with an excess of fuel, will enable you to throttle your engine from sixty miles an hour down to a walk.

Get all the power out of your engine and forget your carburetor troubles.

Write to-day for complete details.

THE CHAPIN MANUFACTURING COMPANY
INDIANAPOLIS, IND.

THE CHAINLESS TRUCK!

A SHAFT-DRIVE AND FULL FLOATING REAR AXLE MAKE THE GLEASON SUPREME AMONG LIGHT DELIVERY CARS!

¶ The Chain Drive is all O.K. on a 2 or 3-ton truck. But not so on a medium light-weight Commercial Car where **both** speed and efficiency are required. ¶ **GLEASON** Commercial Cars are made on one chassis only—a chassis that has stood the test of five long years without a single radical change. The **GLEASON** shaft-drive does away with the annoyance of cumbersome chains. The **GLEASON** Full Floating Rear Axle eliminates all rear axle trouble.

The GLEASON

Is a stylish and a practical Commercial Car. It is furnished with either closed or open body. Carrying capacity, 1000 pounds. A sturdy car and a substantial car. Yet a model of simplicity in construction. Made with an eye single to its thoroughness — its completeness. Pneumatic or cushion tires, as desired.

$1050 to $1400

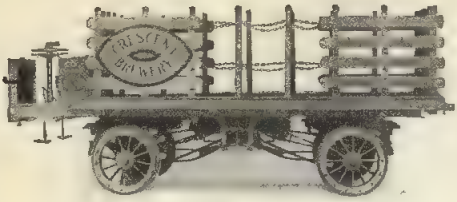
¶ Sliding gear transmission, with three speeds forward; multiple disc clutch with cork inserts and full floating rear axle.

¶ The **GLEASON** is famed for its economical upkeep. Its high-class construction leaves practically nothing to get out of order or go wrong. And its powerful engine enables it to go over any kind of road and in all kinds of weather.

¶ This car will stand the closest investigation—will make good under the severest test.

¶ May we supply you with full information? Will you kindly write or wire us to-day? We want red-blooded agents in all unoccupied territory.

K. C. Vehicle Co., Manufacturers, Kansas City, Mo.



AMERICAN STANDARD TRUCKS

AGENTS:

NOW IS THE TIME
HERE IS THE TRUCK
IT IS NOW UP TO YOU

The Commercial Truck Revolutionized

¶ Power on all four wheels. ¶ Fifty per cent. saving on tires. ¶ Load carried over all four wheels. ¶ Turns in half the space required by others.

Write for Agents :: *Big Money-Making Proposition*

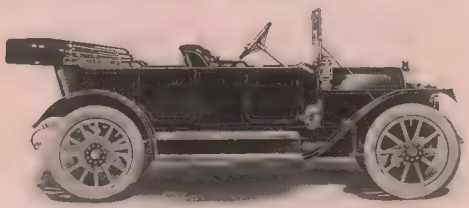
American Motor Truck Company
OF MICHIGAN
General Offices: 1016-1017 Ford Bldg., Detroit

PRICES:

One Ton,	$1400.00
Two Ton,	1900.00
Three Ton,	2700.00
Five Ton,	3500.00
Ten Ton,	6000.00

The Long Stroke "Penn"

1912 Models



Model "RF"
"LONG STROKE"
ROADSTER
4-cylinder 30 H. P.

Selective type, sliding gear transmission, three speeds forward, 105-inch W. B.; 32 x 3½ inch wheels, Q. D. rims, cone clutch; aluminum steps; 25 gallon tank.

$1000.

Model "T-4"
"LONG STROKE"
4-Passenger
TORPEDO TOURING
4-cylinder 30 H. P

Selective type, sliding gear transmission, three speeds forward; cone clutch; fore-doors; richly finished.

$1100.

Model "TR"
"LONG STROKE"
TORPEDO ROADSTER
4-cylinder 45 H. P.

Bore, 4½ inch; stroke, 5½ inch; 115-inch W. B.; ball bearing transmission; 34-inch wheels. Powerful, strong, swift and dependable.

$1350.

Model "T-5"
TORPEDO TOURING
4-cylinder—45 H. P

Bore, 4½ inch, stroke, 5½ inch; 115-inch W.B.; ball bearing transmission; 34-inch wheels; roomy, powerful, economical, luxurious.

$1400.

Model "D"
"LONG STROKE"
DELIVERY CAR

4 cylinders, 30 H. P.; 115-inch W. B.; roomy, attractive body. The right car for Department Stores, Grocers, Laundries, etc. Special bodies to order.

$1250.

Built in Pittsburgh, in the heart of the Vanadium district, "PENN" cars stand at the head of a long list of achievements wrought out in that great City of Steel. The LONG STROKE Motor means greater power, longer life to bearings, absence of vibration, flexibility, economy and dependability. "PENN" cars are light, strong, powerful, roomy and luxurious. They represent the acme of perfection in all that makes for a desirable car.

Our advance booklet containing complete specifications sent on request by addressing Dept. S.

Reliable Dealers in Unoccupied Territory Can Secure an Attractive Selling Agreement

Penn Motor Car Company

7510 Thomas Boulevard **Pittsburgh, Penna.**

SCHACHT $1385

5-Passenger Touring Car—120-inch Wheel Base—34-inch Wheels

You Can Own a Big 4-Passenger Touring Car and Still Save Money

Until this year the motor car buyer was given a choice of two alternatives. Either he had to pay a big price in first cost and up-keep for the joy of owning a big, powerful car, or—

He had to content himself with a smaller, less powerful car than he really wanted in order not to make motoring an extravagance.

Now—the new 1911 Schacht Touring Car offers you everything in size, power, speed, comfort and appearance that you want, at a cost that makes its purchase *an actual economy.*

THE SCHACHT

is a car for the whole family—it has the large wheels and long wheel-base that are necessary to smooth, rapid, comfortable riding over rough roads. It has power to spare—full 40 H. P. Dealers find a demonstration and a statement of the price conclusive arguments.

If you want a smaller car or a delivery car—

The 3-in-1 Schacht—$850

offers you greater value and more capacity for all-round service than any car at its price on the market.

Readily changed in five minutes' time from a Runabout to a 4-Passenger Car or Delivery Car -by the addition of a rear seat or wagon box *it is really three cars in one at the price of one.*

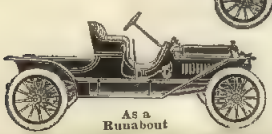
The Schacht Motor Car Company

2805 Spring Grove Ave. **CINCINNATI, OHIO**

See our Exhibit at the Chicago Automobile Show, January 25th to February 4th.

As a 4-Passenger Car

We have a special proposition for established dealers in certain territory where we desire better representation. Write at once.



As a Runabout

Catalogue and full particulars mailed on request.

As a Delivery Car

Go and Look at the Hudson "33"
Howard E. Coffin's Masterpiece

For weeks the showrooms of Hudson dealers have been thronged by anxious motorists who wanted to see the 1911 creation of Mr. Coffin, the Hudson genius, who is regarded as America's master builder of motor cars.

The announcement that his latest and greatest car would soon be on the market brought hundreds of requests for demonstrations. Many went even further than that. They contracted for cars and paid their deposits on them, just from seeing the photograph of the Hudson "33" and knowing that it was "by Coffin."

In this case, realization is better than anticipation. The car is better than the picture. Those who have already contracted for their Hudsons are setting more store by their 1911 touring days than before they actually saw the models. They bought because of a man's reputation. They figured that you can always tell what a man will do by what he has done.

And since the name of Howard E. Coffin is linked inseparably with some of the greatest American successes in motor car designing, those early buyers, now looking at their cars for the first time, can lean back and say, "I told you so."

Don't delay seeing the only new car of the year. You need to know about it, because everybody is talking about it.

The Hudson line comprises four models:

Hudson "33" Touring Car, $1,250

Hudson "33" Pony Tonneau, $1,300

Hudson "33" Torpedo, $1,350

The Roadster, $1,000

HUDSON MOTOR CAR CO.

4049 Jefferson Ave. :: :: Detroit, Michigan

Licensed under Selden Patent

Schwarz Patent Spokes

Wheel for Heavy Motor Truck

THE SCHWARZ WHEEL

FOR ALL TYPES OF MOTOR VEHICLES

Strongest—Safest—Most Economical

Spokes at the tenon are grooved and mortised and interlock, forming an absolutely compact, immovable assemblage, which cannot loosen under the most severe strain. The only wheel with positive and evenly distributed spoke support. Can be made and shipped complete without hub.

We were pioneers in the manufacture of the heavy truck wheel, and have made of it a careful study. We maintain a special, fully equipped department for this work, and are prepared to design and proportion wheels in proper keeping with the other features of construction. Our engineers are at your disposal.

All the leading manufacturers of Motor Trucks use the **Schwarz Wheel** strong evidence of its superiority. It is the only wheel which will stand up continuously under heavy stress.

Send for illustrated booklet.

The Schwarz Wheel Company

Frankford, Philadelphia

THE SELDEN CAR now entering upon its Sixth Successful Season, has everything to recommend it to discriminating buyers. It has an air of refinement, and completeness of finish not surpassed in any car, no matter what the price. The Selden is a tried out car, possessing every desirable mechanical feature. It has a surplus of power, and is remarkably efficient and economical. Be sure and see the SELDEN at the coming Automobile Shows.

SPECIFICATIONS

MOTOR—Water-cooled, 40 H. P.—Bore 4¾", Stroke 5"
CLUTCH—Multiple disc—Dry plate type
REAR AXLE—New design—Full floating type
TRANSMISSION—Sliding gear—Selective—3 speeds forward
IGNITION—Double system—Bosch Magneto—Coil and Battery
TIRES AND RIMS—36 x 4—Q.D. demountable
WHEELBASE 125 inches.

All Models Completely Equipped

5 Passenger Touring Car	**$2500.00**
7 Passenger Touring Car	**2900.00**
3 Passenger Roadster	**2500.00**
4 Passenger Torpedo	**2500.00**
7 Passenger Limousine	**3750.00**

SELDEN MOTOR VEHICLE COMPANY

ROCHESTER, N. Y.

To the Consumer

THIS is a sectional view of the SHARP SPARK, the best plug that ever entered an engine cylinder. You don't believe it, eh? **We know** it, and to prove our confidence in it we will make you this proposition:

Send us the purchase price of a set of SHARP SPARKS and we will send them to you prepaid. Give them a **FOUR MONTHS'** trial and if at the end of that time you decide that they are not the **best** plugs that you have ever used, return them to us and we will **refund your money.**

The Sharp Spark is Absolutely Guaranteed for One Year

To the Retailer

A satisfied customer is your best asset. Put in a line of SHARP SPARKS, and at **any time,** if for **any reason** you are not satisfied as to its merits, you may return to us what you have on hand, and we will **refund your money** by return mail.

To the Jobber

Now, Mr. Jobber, doesn't this listen good to you? Satisfied customers, guaranted plugs and the goods on your shelf convertible into cash at a minute's notice?

Get Busy

All threads in both regular and long lengths.
Price, Mica Insulation, $1.25
" Porcelain - - 1.00

The Sharp Spark Plug Co.

3346 Broadview Rd., Cleveland, Ohio

KIMBALL-UPSON CO., Sacramento Cal
WESTERN RUBBER & SUPPLY CO., Los Angeles, Cal.

Canadian Selling Agents:
Canadian General Electric Co., Limited
Toronto Montreal Halifax Ottawa Cobalt
Winnipeg Calgary Vancouver Nelson

A sectional view of THE SHARP SPARK, showing construction of the secondary combustion chamber. Owing to its closed nose, this plug will stand more abuse from soot, oil or water than any plug in existence.

THE NOTE PIERCING THAT PENETRATES

The SIRENO

THE NOTE PIERCING THAT PENETRATES

ANNOUNCEMENT FOR 1911

The SIRENO Company announces for the year 1911 in addition to its improved Automobile Types of Warning Signals, also Marine Types and a Motorcycle Horn.

SIRENO AUTOMOBILE TYPES

As the name implies, the SIRENO Signals produce a note of the siren quality, a tone clear and bell-like, with wonderful penetrating power.

The warning note of the SIRENO Signals is not harsh, but a piercing tone, perfectly controlled and modulated at the will of the operator—a long range and a short range signal in one. At long range it has the effect of an air whistle and at short range, while it instantly forces attention, it does not startle or frighten because it has not the explosive abruptness of some signals.

Automobile Type—with Long Projector

PRICES:

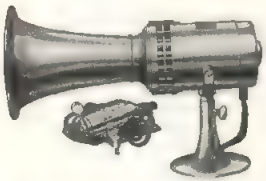
"SirenO" (Long or Short Projector, optional)	$35.00
JunioR	25.00
MidgeT, with Projector	18.00

Complete with regular Switch, Cables, Bolts, Nuts, Instructions, etc.

SIRENO MARINE TYPES (NEW)

SIRENO Marine Types differ from the Automobile Types only in point of finish, style of operating switch and method of attachment, the Marine Types having a special swivel deck base. They are furnished either in hard Baked Black Enamel or extra heavy Nickel Plate, both of which are impervious to the action of salt water and very durable.

ALL ARE ELECTRIC and operate from the regular ignition battery without in any way interfering with its regular duties.



Marine Type—with Long Projector

PRICES:

"SirenO," with Long Projector	$37.50
JunioR " "	27.00
MidgeT " Projector	19.50

(Specify Black Enamel or Nickel Plate.)

Complete with Marine Switch, Cables, Bolts, Nuts, Instructions, etc.

THE SIRENO CYCLEPHONE (NEW)

The CYCLEPHONE is a siren whistle, a long distance warning signal, designed exclusively for motorcycle use. Operates by friction with the front tire.

A light, aluminum turbine, or fan, is mounted on one end of a shaft (running in two sets of ball bearings), on the other end of which is a friction pulley. A touch of the lever brings the friction pulley in contact with the moving tire, revolving the turbine, which generates the air currents that produce a note of tremendous carrying power.

The CYCLEPHONE may be attached to nearly all standard makes of motorcycles. In one or two instances an adapter is necessary, **therefore specify make of motorcycle when ordering.**

The CYCLEPHONE Price, $12.00

The SIRENO Catalog, 1911 Edition, fully describes the various types of SIRENO Warning Signals and SIRENO Accessories. Mailed upon request

To the Trade:—A catalog is incomplete without a description of SIRENO Signals. Write for a copy of the "SIRENO Cut Book," showing electrotypes of various styles and sizes.

See our exhibit at Madison Square Garden, Space No. 317.

Electric Warning Signals and Accessories

The SIRENO Company

1107 Taylor Building
New York
U. S. A.

TYPE No. 1

TYPE No. 2

FROM the inception of the automobile industry, buyers of rims (including manufacturers as well as consumers) have looked upon us as an authority on this subject and await our annual announcement before placing orders Because of this anticipation, and reliance in our statements, we make the following announcement:

ONE or another of the three types of Standard Universal Quick Detachable Demountable Rims shown on this page has been chosen by nearly every automobile manufacturer as STANDARD equipment for his 1912 car. These rims will fit ANY make of domestic automobile tire, either STRAIGHT SIDE or CLINCHER

Type No. 3 you are familiar with and present indications are that it will be as popular during the coming year as it was in the past.

Types Nos. 1 and 2, which so quickly climbed into favor with the trade are, from indications of orders received, going to remain in their present high position. The same felloe band is used on Types Nos. 1 and 2 and will accommodate the rim base or outer rim of either type. The side rings are reversible, accepting either straight side or clincher tires. The locking bolts used in the demounting feature are truly the most wonderful device employed for this purpose, a few turns securely fastening the rim into position.

TYPE No. 3

To summarize, all three types are HIGHLY perfected and hundreds of sets are being shipped DAILY to ALL parts of the WORLD and giving SATISFACTION wherever used

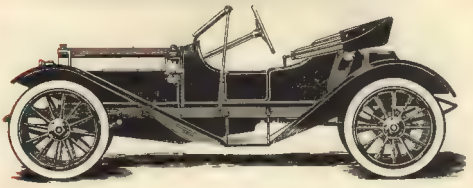
We shall have all three designs on exhibition at Madison Square Garden, New York, January 6th to 20th, and at the Coliseum, Chicago, January 27th to February 10th. Your inspection of them we shall consider a great favor and you will be IMPRESSED by their PERFECT construction and HIGH efficiency.

NOTE —We shall reserve a limited number of our 1912 Show Booklets for those unable to attend either show. Postal request or your business card will secure a copy. It is worth while.

THE STANDARD WELDING COMPANY
CLEVELAND. (NEW YORK—CHICAGO—DETROIT)

RIMS 1912

The Union "25" $650



Made a Little Better Than Seems Possible

THE success of the Union "25" will be built on our ability to hold to the policy that a high-grade, high powered automobile can be sold at a price within the reach of all. Built in such numbers that the cost of efficient factory operation can be reduced to a minimum yet not in such exceedingly great quantities but that each car can be given that degree of individual attention which distinguishes the high-grade automobile. In every detail you will find this same touch of the high grade which distinguishes the Union "25" from other cars in its class.

The objection to the small car previously has been that those offered to the public have lacked the grace of line, the beauty of finish, the delicate refinement of the big car. They have been essentially low-priced cars produced to appeal by small initial outlay. The effort has been to give the appearance of great value at small cost. In consequence they have been marked by bulk, by crudity of design and workmanship, and by the lack of quality in the material of which they have been constructed.

The mechanical head of our concern has for several years been associated with some of the largest automobile companies, and has had an unusual chance to study the best combination for a car in any class. A study of the specifications and the cut shown above will show anyone who knows that a better or more up-to-date car would be hard to imagine.

Guarantee

We Guarantee Union "Twenty-five" against defects of material and workmanship Should any part of same be found defective within one year from date of its purchase, we agree to replace such defective parts, providing same are returned to our factory, charges prepaid.

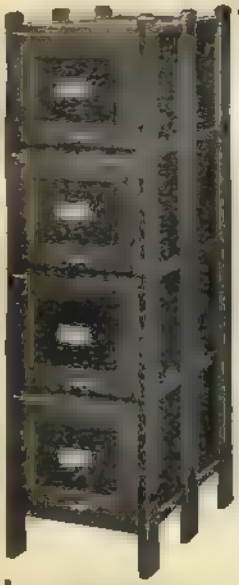
Write for literature

Union Sales Co.

61 E. Spring St., Columbus, Ohio

SPECIFICATIONS

POWER PLANT—25 H. P., unit power plant; four cylinder motor; 3¼ bore, 4 stroke; cylinders cast in pairs. Power plant entirely enclosed in case extending from front end of motor to rear end of transmission. Long crank shaft running in three bearings.
COOLING—Positive circulation by centrifugal water pump.
LUBRICATION—Self contained splash and crank case; oil circulation a by gear pump
IGNITION—High-tension Bosch magneto.
CARBURETOR—Model D. Schebler.
CLUTCH—Multiple disc running in oil
TRANSMISSION—Selective sliding gear; three speeds forward and one reverse. Direct drive on high speed. Located directly beneath removable floor boards, and easily accessible.
CONTROL—Set spark throttle controlled by foot accelerator. No central on steering gear. Transmission lever and emergency brake in the center of the car. Clutch and service brake by regular foot pedals all arranged so that they are particularly easy to manipulate
DRIVE—Direct shaft drive through bevel gears. One universal joint making for a few parts and more direct transmission of power
STEERING GEAR—Rack and pinion type. No adjustments necessary. The strongest steering gear made. Right hand drive
FRONT AXLES—I-beams steel drop forged, ball bearing thrust on top of steering spindle.
REAR AXLES—Semi-floating type and shaft driven, equipped with bevel compensating gear. Roller bearings.
BRAKES—Two sets, external contracting service levers operated by foot internal emergency brakes operated by hand lever. Both on drums at rear wheels.
WHEELS—Heavy artillery type with 1¼ inch spokes. 7 inch hub flange
BEARINGS—Front wheels, large size ball type. Rear system, roller and ball.
TIRES—Diamond or Goodrich, 30 x 3.
FRAME—Pressed steel section. Raised over rear axle.
WHEEL BASE—100 inches.
SPRINGS—Semi elliptic front 34 inches long. Full elliptic rear 52 inches long
BODY—Metal, foredoor, two passenger, door handles inside
UPHOLSTERING—Best pebble grain leather.
GASOLINE CAPACITY—15 gallons. Tank on rear.
WATER CAPACITY—3 gallons.
STANDARD COLORS—Dark Royal blue, Battleship gray running gear; Black fenders.
EQUIPMENTS—Regular includes 3 oil lamps, tools, pump, jack, tire repair kit and horn.
FOR $50.00 EXTRA we furnish top, windshield, trunk, gas lamp and generator.
PRICE—$650.00
WEIGHT—1300 lbs.



ANY Supplies For Office

SATISFACTORY IN QUALITY — Weis — REASONABLE IN PRICE

Anything from a Clip to a Desk

CATALOG "D"—64 pages of time and labor saving office appliances, including *four complete lines* of filing devices, in a wide range of prices.

CATALOG "E"—Handsome, practical, inexpensive Sectional Bookcases. (Two complete lines)

BOTH FREE with Booklet "Filing Suggestions."

Weis Solid Oak Letter Files

hold 20,000 letters. Drawers dust proof on roller bearings and equipped with follow blocks. Reference is quick and easy.

$13.25 Freight paid for either Golden or Weathered Oak. Birch Mahogany, $14.50.

When preparing to equip, refurnish or systematize your office, you should see our catalogs containing a most varied line of time saving devices.

We supply **Weis** Filing Cabinets, Card Index Outfits Bookcases Flat Top and Typewriter Desks Clips, Paste Scrap Books, Magazine Binders Invoice Files or Books, Postal Scales, etc., etc.

Weis Filing Desk incorporates *your choice* of filing drawers in a handsome flat top desk. Choice of nine kinds of drawers for Filing Letters, Index Cards Checks, Electros, etc. arranged to suit you. Solid Oak, Golden or Weathered **$22.00** Birch Mahogany, **$24.50**, freight paid

Drawers on roller bearings. Top, 52 x 26 inches. Swinging Stand extra.

$12.80

Plain Oak **Freight Paid**

Weis Slide Door Sectional Bookcase

THE ONLY ONE incorporating **all** your bookcase desires

Double doors slide horizontally in steel lined grooves. This eliminates **all** door trouble.

Saving in material, economy in construction, NOT sacrifice of quality, makes the low price possible.

Sold under liberal guarantee.

$12.80

Stack as shown, Plain Oak, Golden or Weathered freight paid.

See Catalog "E" FREE, showing Standard and Mission styles in all popular finishes.

Weis Swinging Stand attached to Filing Desk for Typewriters, Card Index Books, etc.

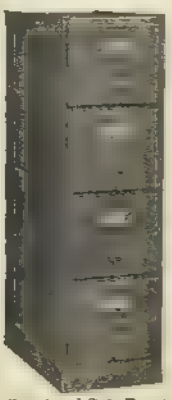
A handy desk extension, occupies no floor space. Top Golden Oak 14 x 18 inches. Swings out or in on metal frame. LOCKS instantly rigidly

Black Enamel Frame, **$3.50** Ox-Copper or Nickel Plated **$4.00** Express paid in U. S.

$22.00

FREIGHT PAID, at prices quoted east of Mont., Wyo., Colo. Okla and Tex. Consistently low rates beyond

Holds 9 000 3 x 5 Cards 15,000 Letters. **$16.75. Frt. Pd.**



Quartered Oak Front **$20.00. Frt. Pd.**

The Weis Mfg. Company

180 Union St., MONROE, MICH.

New York Office, 108 Fulton St. (Address Mail to Factory.)

Mechanical Prodigies

There are enough wonderful mechanical features to the White trucks that would enable us to talk nothing else. We could call them mechanical prodigies and the automobile world would approve of it – but, after all, this wonderful mechanical superiority means nothing to you as a buyer of motor trucks unless the White truck is delivering a full measure of satisfaction to every owner that interests you. You want the story of performance—results! results! results!

White Trucks Produce Results

Realizing this, we believe no more complete endorsement could be offered than to state that we have hundreds of owners scattered through the states operating trucks under all conditions all roads, grades or other obstacles which make trucking difficult, and there isn't an owner to whom we could not refer a prospective buyer. Not one to whom we not only *can* but *will* refer any customer who asks. If there were any weak points in our engine, certainly some one would discover it—if there were any weak points in our chassis construction, surely some one would know it – if there is a lack of general effectiveness, we could not fool all our owners on the contrary, this list of White owners is almost a business directory of the biggest men in the business world, a fact which should say to you, "The White truck is the one I want to know—to investigate"—and that means to buy.

Give us the facts and figures about your delivery requirements and we will send a solution using motor trucks—a catalogue, too, for the asking.

The White Company

860 EAST SEVENTY-NINTH STREET, CLEVELAND

Motor Truck Advantages

The man or firm that has a better delivery plant has an advantage. It isn't so important that it saves money—that it makes a cheaper delivery although if the right trucks are chosen, under most circumstances, it will also be more economical—but the important thing is, that the superior facilities supplied by motor vehicles give their owner advantages—it out-strips competition it serves the customers better. Live business men may no longer dodge the issue motor trucks are here to stay it's only a question of who will be first to grasp the opportunity in his line, or his town.

The Advantages of the White Trucks

When it comes to buying machines, the best machine is the cheapest no matter what it costs. Here's where White motor trucks score everyone has heard about the White gasoline-engine design how it foreshadowed what is accepted now as the best foreign practice and what is rapidly becoming adopted in this country by the most aggressive manufacturers. Next, each White truck is as well built as the most scientific, modern steel alloys will permit. In addition, every piece of steel is heat-treated to make White trucks as staunch as they may be built. The long-stroke engine makes them economical in operation makes them efficient—the kind you must recognize as having unusual merit. White trucks may be grafted onto your delivery plant completely revolutionizing its capacity giving it vitality without demoralizing its present force. Any bright teamster can drive a White truck, it's so simple.

May we send you a catalogue and testimonials of some of the world's largest users?

The White Company

860 EAST SEVENTY-NINTH STREET, CLEVELAND

THIS TRUCK WILL DO THE WORK OF SIX TO EIGHT HORSES

✦ ✦ ✦

IF you have a stable of six or eight horses to do your delivery work, you know what it costs to keep the stable running. If you have two, three or four times that number, you are all the more impressed with the cost of your delivery plant. One White gasoline truck will do the work of six to eight horses—more reliably—more certainly than horses. The truck is untiring, capable of being worked twenty-four hours a day if necessary, a big advantage in holiday season. It furnishes a better-looking delivery, stamping the owner as progressive and up-to-date. But best of all, it's cheaper. If there is no other sense in which a motor vehicle appeals to you—the White Truck must reach you by the saving it makes in your business.

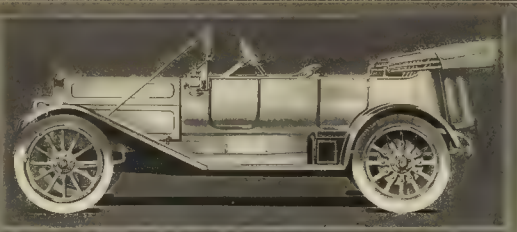
WHITE MOTOR TRUCKS

The White Motor Trucks are just as well built as it is possible to make them. All that the latest scientific treatments of steel can do to make frames, motors, transmissions—every part of the car unwearable, unbreakable—has been done. We are building trucks, not for to-day, nor to-morrow—but trucks that should make horses impossible, because their service is too costly. Why not get in touch with us at once—find out the saving our customers are actually making—find out about the life of tires on our wagons—find out to your satisfaction that about all any customer of ours has to buy is gasoline and oil. If you want this kind of service, the White Trucks and Delivery Wagons will give it.

Why not write to-day for more intimate details, catalogues and testimonials?

The White Company

860 EAST SEVENTY-NINTH STREET, CLEVELAND



THE THOMAS "SIX-FORTY" SURREY $4000.

NOTHING COUNTS LIKE SERVICE

Thomas

TECHNICAL SERVICE for THOMAS OWNERS

Confidence

The success of the present Thomas organization rests upon the confidence of the public in its product, its methods and its business integrity.

With a full realization of this fact the Thomas Executives place themselves squarely on record as exponents in the broadest sense of "The Square Deal".

Two Chassis 134-inch and 126-inch Wheel Base **Four styles of Open Bodies** Seven-Passenger Touring Car Five-Passenger Phaeton Four-Passenger Surrey Two-Passenger Runabout - - **Price $4,000 for each type**

Enclosed bodies are built for both chassis and full details are given in our catalogue—"The Story of the Thomas", which awaits your request.

E. R. Thomas Motor Car Company, Dept. B, Buffalo

THOMAS DECLARATIONS (No. 1) *We assert that the 1912 Thomas "Six-Forty" has the most powerful and effective brakes of any car of its weight and class, insuring the utmost safety to passengers.*

THOR MOTORCYCLE

WITH FREE ENGINE CLUTCH

It is a pleasure because the Clutch works perfectly.

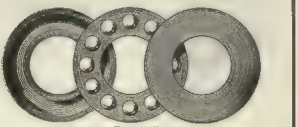
A Multiple Disc Free Engine Clutch is now supplied on all THOR Motorcycles as regular equipment.

We have some live territory open for live Agents. Write. Yours might be open. Full particulars on request.

AURORA AUTOMATIC MACHINERY CO. :: Thor Building, Chicago

THE STAR BALL RETAINER CO.

Lancaster, Pa., U.S.A.



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RADIAL RETAINERS

Manufacturers of Radial Ball Retainers, Thrust Ball Retainers, Complete Thrust Bearings Special Stamping, etc.

Furnished on All Good Bicycles They Help You Sell

Specify Them

CONSOLIDATED MANUFACTURING COMPANY

1710 Fernwood Ave. Toledo, Ohio

F. C. CORNISH, Eastern Representative
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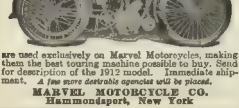
1911 NEW ERA AUTO-CYCLE

Two-Speed Transmission. Free Motor. Motor Started by Means of a Crank. Comfortably Upholstered Form Saw. Foot Board 6.2 Inch Wheel Base. Internal Expanding Brake. Cushion Spring Fork. No Pedals.

Why not be comfortable while riding a motorcycle? You can be if your mount is a NEW ERA. The rider of a New Era Auto-Cycle will tell you that after riding a New Era nothing could induce him to go back to riding the old style pedal push motorcycle. You are more comfortable in riding the New Era than you would be in riding in an Automobile in fact, the New Era is a two wheel automobile. It starts like one, operates like one, and after riding the New Era for a hundred miles you are just as fresh and comfortable as you were when starting. GREATEST HILL CLIMBER BUILT. 4 and 6 H. P. single cylinder ball bearing motors.

THE NEW ERA AUTO-CYCLE COMPANY, 7 Dale Ave., Dayton, Ohio, U. S. A.

CURTISS MOTORS



are used exclusively on Marvel Motorcycles, making them the best touring machine possible to buy. Send for description of the 1912 model. Immediate shipment. *A few more desirable agencies will be placed.*

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Motorcyclists Attention!

—SEND FOR OUR LARGE CATALOGUE—

Special Novelties—Prices are Right

Merkel Motorcycles, Indian Parts, Repairs, etc.

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Now Ready

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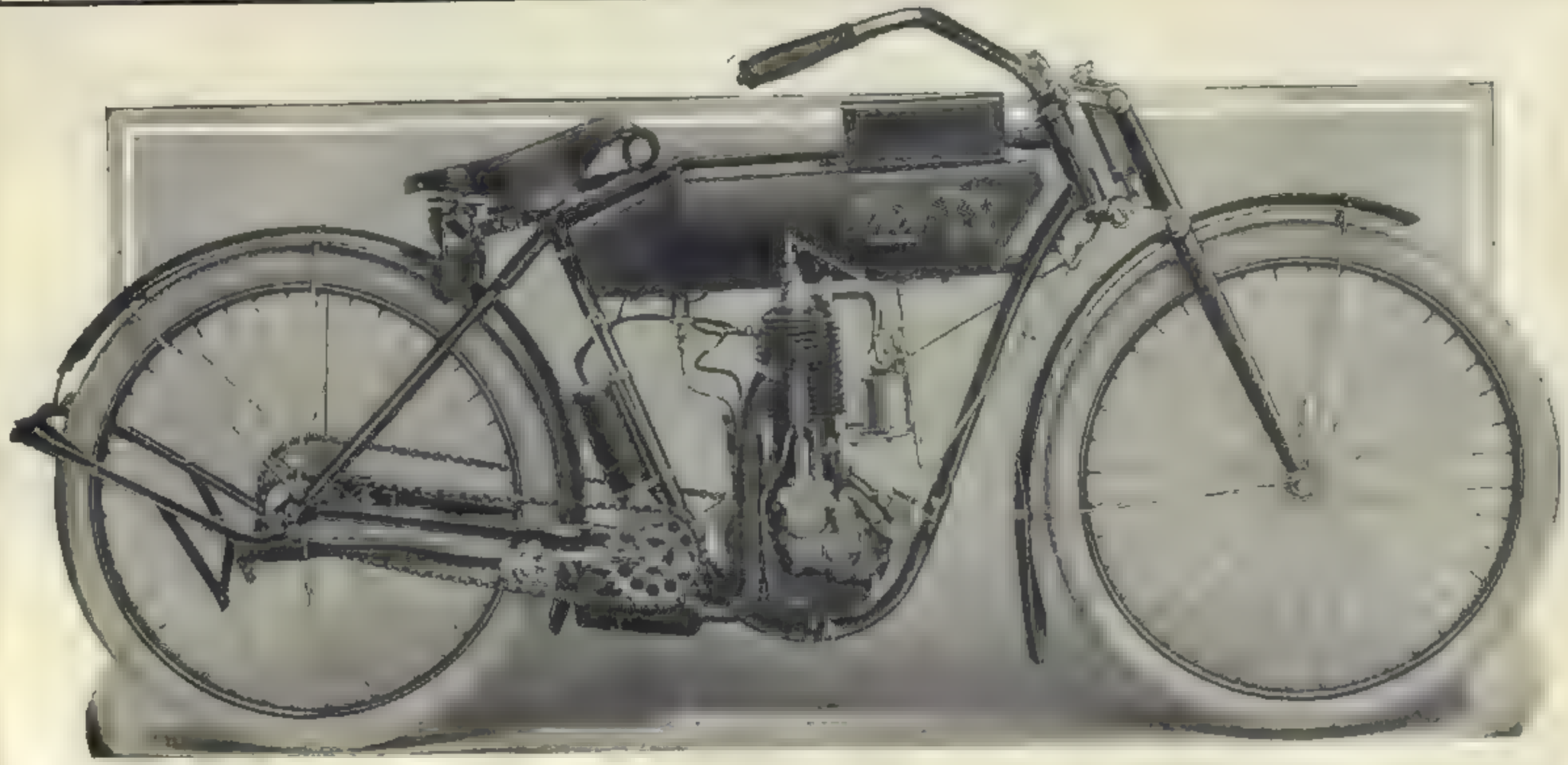

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DUPLICATE OF F. A. M. ENDURANCE CONTEST WINNERS

Get next to the Thor agency **1911 Catalogue ready for distribution**

Aurora Automatic Machinery Co., Thor Building, Ill.

Over Two-and-a-half Million People are Reading About

THE NEW

Torrey "Honing" Strop

We are telling the readers of the most widely circulated magazines in the country just why they should buy a Torrey Honing Strop. We have told them how we discovered the wonderful sharpening preparation that puts this strop so far ahead of anything else on the market. We are every day convincing more people that this new Torrey Honing Strop is the best there is, and telling them to ask their dealers for them. Now, after working these men up to the buying point, we don't want them to experience any difficulty in getting the one strop that will satisfy them and live up to our claims. You should have an assortment of these new Torrey Honing Strops in stock now, so as not to miss any sales. With every order for an assortment of Torrey Honing Strops amounting to $25, or over, we will give one of these handsome display cases, shown in illustration, free.

Every dealer who didn't take advantage of our offer in *Iron Age-Hardware* of January 14th, of a new Torrey Honing Strop, absolutely free, should write for one now.

Dept. F

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Pruning Shears
Lopping Shears
Tree Pruners
Send for Catalogue No. 7

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THE CLEVELAND GALVANIZING WORKS CO.
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ASPARAGUS OR WEED DIGGER

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offers its services in selecting and supplying technical and industrial books to our readers.

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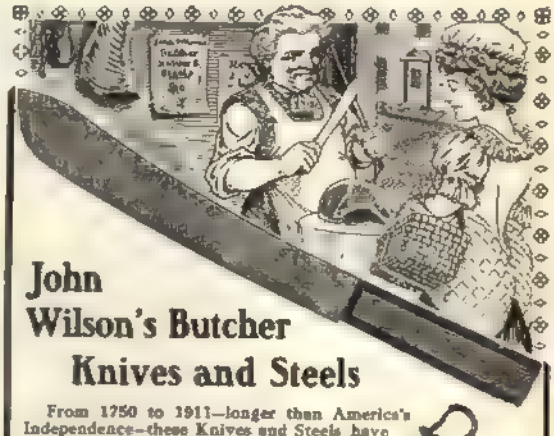

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From 1750 to 1911—longer than America's Independence—these Knives and Steels have had a continuous manufacture.

At first, selling from manufacturer to consumer now through the jobber to the merchant and through him to the consumer. Giving the ultimate buyer a three man guarantee for quality and satisfaction

And this is a truism, that in the 160 years of John Wilson's manufacturing, no buyer has ever been dissatisfied with the service these Butcher Knives and Steels have given.

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CELEBRATED AMERICAN HORSE RASPS

"BEST BY TEST"

Perfect Satisfaction Guaranteed

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Established 1836—Incorporated 1899

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Sole Manufacturers of the Celebrated STOKES BROTHERS HORSE RASPS and ST. CRISPIN SHOE RASPS

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DAVID WILLIAMS COMPANY, 14-16 Park Place, New York.

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Mr. Mrs. & Miss Automobilist:

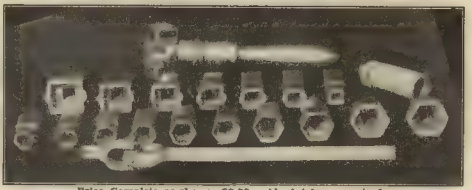
The attractiveness of an automobile lies in the gracefulness of its lines and the beauty of its finish
It costs from $50.00 up to refinish a car. You can save this expense by using Golden Star Polish.
It will keep the finish Clean, Bright and Clear, giving to it that smooth velvety freshness that all desire.
Prevents checking and staining. Gives durability and beauty to the finish.
Ask your dealer for a free sample, or write us for one.

Dealers: Golden Star Auto Body Polish cleans, polishes and protects the finish. Prevents mud and road oil from sticking and spotting. Cleans and finishes Tops and Cushions, will not gum, stick or leave a greasy surface to catch dust or soil the clothing.
Order of your jobber.

Jobbers: You will have many calls for Golden Star Automobile Body Polish. We will furnish you with cuts for your catalog. Write us now.

R. W. Morris Mfg. Co., (Incorporated) Kansas City, Mo., U. S. A.

The U. S. Ratchet Wrench



Price, Complete as shown, $7.50. Absolutely guaranteed

DON'T WASTE TIME and energy and patience and physical comfort, readjusting a dozen times the ordinary wrench to get a fast grip on [illegible] nut, lying on your head, or [illegible] the grease—or using the hammer and chisel.

Use the U. S. RATCHET WRENCH and you'll **keep sweet.** Compare it with others on the market for superior **strength** and **design** and **adaptability,** either applied direct or with extension; acting in **short range,** reaching and removing nuts inaccessible with an ordinary wrench. 18 sockets, especially substantial, practically unbreakable in use.

Mr. Auto-owner, if your dealer does not handle the U. S. RATCHET WRENCH, write us direct for introductory offer in territory where we are not represented.

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Mr. Dealer, line up! Join the procession! The band-wagon for you, because we want you to furnish the music. The least hint from you will bring you full particulars.

U. S. RATCHET WRENCH CO., 215 N. Adams St. Peoria, Ill.

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"WARE OF QUALITY"

"VOLLRATH" MILK KETTLES

have SANITARY Covers. No grooves or crevices to breed germs and spread disease. Made in 1–2–3–4 quart sizes.

FURNISHED IN

SPECIAL BLUE, WHITE and WHITE MAJESTIC and SPECKLED GRAY ENAMELS.

THE VOLLRATH CO.

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Aluminum Collapsible Cups

WE MAKE THE LARGEST LINE ON THE MARKET

Three Section

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Ask for our catalog illustrating our Large Line of Swift Selling Aluminum Household Specialties, Sporting Goods, Etc.

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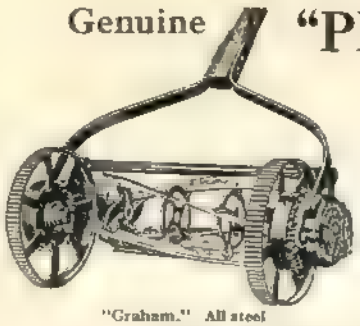
Genuine **"PHILADELPHIA"** Lawn Mowers

The Leaders in the Lawn Mower World



"Graham." All steel

The finest line of High Grade Mowers ever made—embracing 18 styles High Grade Hand and 5 styles High Grade Horse.

Send for New Catalog and Prices

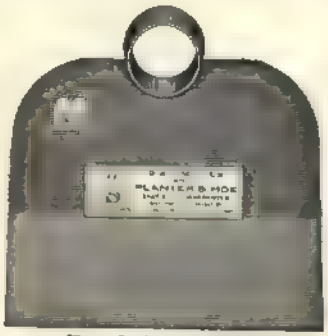
Style "A." All steel

THE PHILADELPHIA LAWN MOWER CO.

Over 42 years makers of High Grade Mowers

PHILADELPHIA, PA., U. S. A.

THE GENUINE SCOVIL HOE



Manufactured Solely by

D. & H. SCOVIL, Inc. - Higganum, Conn.

Two Splendid Sellers

THE DETACHABLE HOSE REEL

Revolves on the Faucet. Attached and detached instantly

Hose pulls off in any direction while the water runs.

Doubles the life of the hose

Hose easily drained. Hangs up on a nail out of the way when not in use.

EASY EMPTYING GRASS CATCHER

Lift it off to empty.

Fits any size or make of lawn mower perfectly Made from either Heavy Duck, Duck sides with Galvanized Steel bottom or Heavy Wire Netting.

Send for Circulars.

Manufactured by

THE SPECIALTY MFG. CO., St. Anthony Park, ST. PAUL, MINN.

Sold through Hardware Jobbers

TOWNSEND GAVE TO THE WORLD THE BALL BEARING LAWN MOWER

GOLF MOWERS

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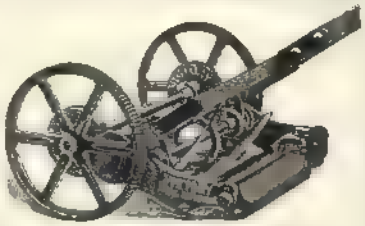

All other manufacturers now make Ball-bearing Mowers for their best grade, but Townsend still leads in designs, quality and finish.

S. P. TOWNSEND & CO., Orange, N. J.

It's Not Too Early To Stock Lawn Shears

Start now and get Universal Lawn Shears in stock in time for your Spring trade. They have more practical advantages than any other lawn shears in the world. Exceptionally fast sellers, and big profit makers.

Note these features. Long handles—blades instantly adjustable to any angle without use of tools—one blade remains stationary.

"Universals" eliminate all stooping down and cut cleanly and easily in, under and around places otherwise inaccessible.

Write now for Circular and Prices

Sweet-Clarke Co. JAMESTOWN NEW YORK

The TUXEDO BALL BEARING

Send for Our 1911 catalogue showing Hand and Horse Mowers in great variety.

Chadborn & Coldwell Mfg. Co.

Newburgh, N. Y.

Chicago Office—180 East Lake Street

IT PAYS TO SELL **IRON AGE Farm and Garden Implements**

The line consists of Iron Age Seed and Fertilizer Drills, Double and Single Wheel Hoes Horse Hoes and Cultivator Iron Age Riding Cultivators, Two Horse Walking Cultivators, Iron Age One Horse Sprayer Improved Robbins Potato Planter, etc., etc

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Distributing points conveniently located. Make all inquiries direct

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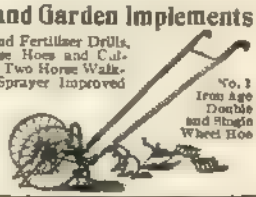

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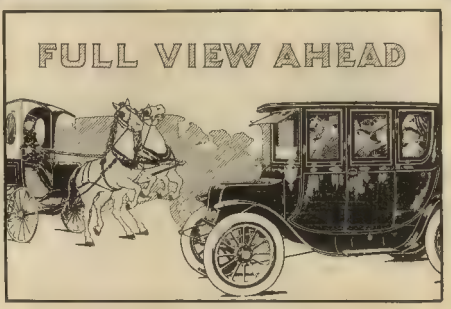
BLAIR MANUFACTURING CO., SPRINGFIELD, MASS.

Tension Drawcut. Ball Bearing Self-Sharpening. Self-Adjusting.

LAWN MOWERS

They are different.



The Full-View-Ahead Electric At The Shows!

You who are interested in Electrics—when you come to the New York and Chicago Automobile Shows, you will want to see the greatest advance yet made in Electric Carriage design

You will find it the Silent Waverley Exhibit

An inside-driven closed car with the driver's seat in front commanding full view ahead through the big front window.

Silent Waverley Limousine-Five

"Full View Ahead"

Design and Construction Patents Applied For

Has ample room for FIVE ADULTS in its deeply upholstered seats. Yet no one is forced to sit with back against the front window.

Three occupants sit on the wide rear seat. One sits to the right of the driver on a separate seat which by a sliding arrangement, enables the front or rear facing.

Silent Waverley Limousine-Five is now **on the boulevards** in the hands of owners. Work on this magnificent car was begun more than a year ago. It was finished in time for months of road test before it was announced to the public.

It has the Silent Waverley High Efficiency Shaft Drive, Powerful Waverley Motor—No-Arc Controller—Full Elliptic Springs front and rear—Solid or pneumatic tires.

Send for the beautiful Waverley Art Book on Town and Suburban Cars

It shows ten models. Prices, $3500 down to $1225. Also the Waverley Catalog of Commercial Vehicles. Exide, Waverley, National, Ironclad or Edison Battery.

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Factory and Home Office

188 South East St., Indianapolis, Ind.

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2043 Market Street

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CHICAGO BRANCH
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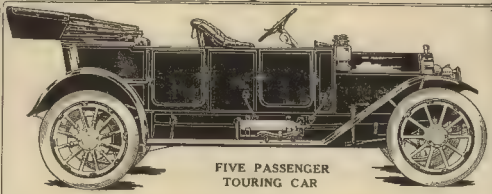
Price, Fully Equipped, $3500

THE MARMON

"The Easiest Riding Car In The World"



FIVE PASSENGER
TOURING CAR

¶ The Marmon "Thirty-Two" is the rational, logical car. Moderate in size and capacity; light in weight with an abundance of power; exceptionally well proportioned and well balanced; made to answer every requirement of city use and touring with the greatest comfort and economy.

¶ The easy riding of the Marmon; its quiet, smooth-running, enjoyable operation; its wonderful ease on tires and economy of fuel, oil and upkeep; these are the results of the superiority of Marmon design Marmon materials and Marmon workmanship.

¶ Compare the Marmon as you please—you will find its value unequaled.

¶ And the present production of the Marmon insures you greater value than ever before. The improvements and added features are included without any advance in the price of the car—already the greatest value offered.

¶ Before you buy any car—know the Marmon!

¶ One chassis. Touring Car, Suburban or Roadster—$2750; Limousine—$4000; Landaulet—$4100. Full information and specifications on request.

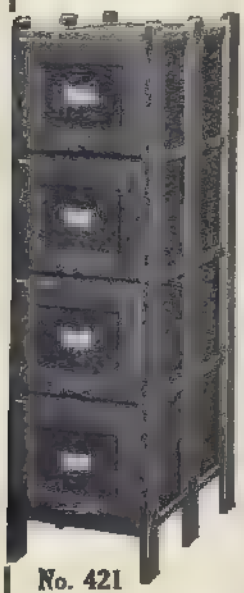
NORDYKE & MARMON CO.

INDIANAPOLIS (Established 1851) INDIANA

SIXTY YEARS OF SUCCESSFUL MANUFACTURING

Say to Your Dealer:
"Show Me a Weis File"

In them Efficiency and Economy are Combined



Unlimited Variety to Meet Your Purpose and Purse

Will you let your "Good Enough" Office Equipment *hinder* you another season?

Get the facts and figures *now*, **before the Fall Rush.** We will help you select the most Efficient Equipment. Write now for:—

FREE "Filing Suggestions"

a booklet brim-full of helps in selecting the equipment you need.

Catalog "D"
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Four complete Lines Filing Devices

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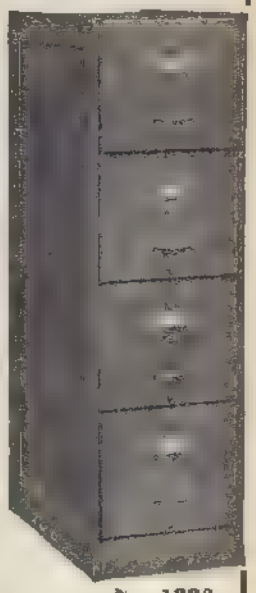
Practical Inexpensive



No. 421
Vertical Letter File

Reference is instantaneous. 5000 papers in each drawer—at your finger tips. Solid Oak. Roller Bearings. Follow blocks. As efficient as a higher priced cabinet. Handsome enough for any office.

$13.25 Freight Paid — Golden or Weathered finish. Birch Mahogany - $14.50

Weis Compact Filing Sections supplied in 26 styles for every filing purpose. Stack them up as you need them. Comparatively inexpensive. Quartered Oak or Birch Mahogany. Finished 4 sides.

Weis Filing Desk combines your choice of 9 kinds of drawers for every filing purpose, in Handsome Solid Oak desk. Roller Bearings. Top 28 x 52.

No. 1220
High Grade Vertical Letter File

For 20,000 letters, orders and etc. Front and Top Quartered Oak, sides and back handsomely panelled. Best plain oak - - - - - **$20.00** Freight Paid

Drawers on Double Roller Bearing Support, roll easily when filled to capacity. Birch Mahogany $25.

How to Transfer

A free booklet on a **Timely Topic.** Write for it or **ask your dealer.** Describes Up-To-The-Minute methods of transferring office correspondence, etc.

Weis Sectional Transfer Cases. All Hardwood Roller Bearings

Each drawer a section. Unlimited expansion. Practically indestructible

$22.00 Freight Paid

Choice of filing drawers. Desk stock, swings or locks. $3.50 extra.

FREIGHT PAID at prices quoted in this advertisement to any railway station **East of** Montana, Wyoming, Colorado, Oklahoma and Texas. Correspondingly low prices quoted **in and West** of these States.

For Contents of 10 Vertical File Drawers

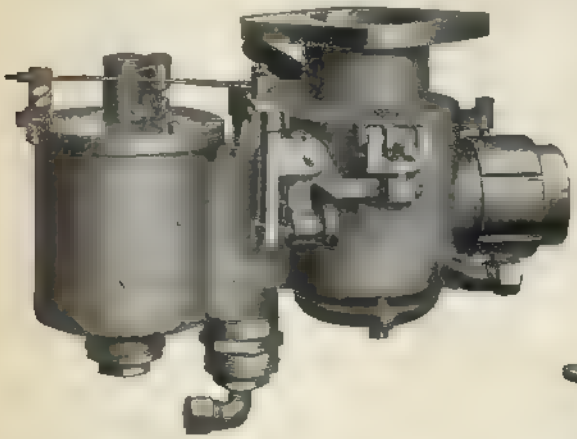
The Weis Mfg. Co.

46 Union Street, Monroe, Mich.

New York Office—108 Fulton Street
Address Mail to Factory

RAYFIELD MODELS D AND F CARBURETORS

The Findeisen & Kropf Manufacturing Company, Chicago, Ill., have placed on the market for the coming season two models of their well known Rayfield carburetor. These are Model D, water jacketed and Model F, without the water jacket.

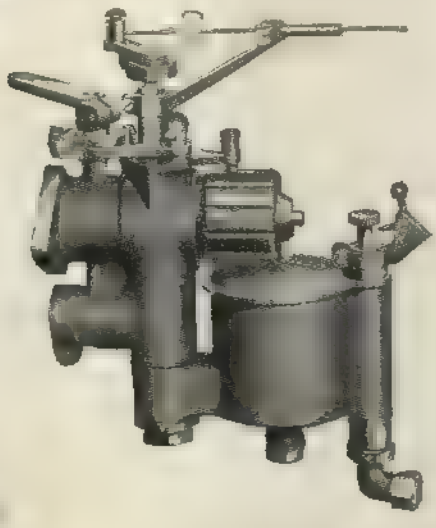


Rayfield Model D.

Model D, the water jacketed carburetor, has an offset float chamber so that the heat of the water jacket does not reach the fuel until it has passed through the needle valve. The float chamber may also be placed either in front or behind as the occasion may demand, enabling the carburetor to be used on any motor regardless of space conditions. The special feature of the carburetor is the dash control, a device which makes for easy starting regardless of weather conditions. A push button is located on the dash connecting by means of copper tubing to a bracket on the carburetor. Pushing this button on the dash raises the needle valve, enriching the mixture and giving the same results as priming motor without any inconvenience.

There are but two adjustments on the carburetor, one for high speed and one for low speed. The automatic air governor has been considerably improved over the former equipment. The spring and valve are now enclosed in a cage which protects them from dirt and water preventing any foreign substances from entering the carburetor.

The Model F Rayfield has been designed in order to meet the demand for a non-water-jacketed Rayfield carburetor for cars of smaller size and also those equipped with Thermo-syphon system of cooling. The same Rayfield principles which have made such a success for the water-jacketed type are used in this model, which is, however, somewhat different from Model D. The general principle is that of the combination of mechanically controlled air and mechanically controlled gasoline, governed by air automatically admitted.

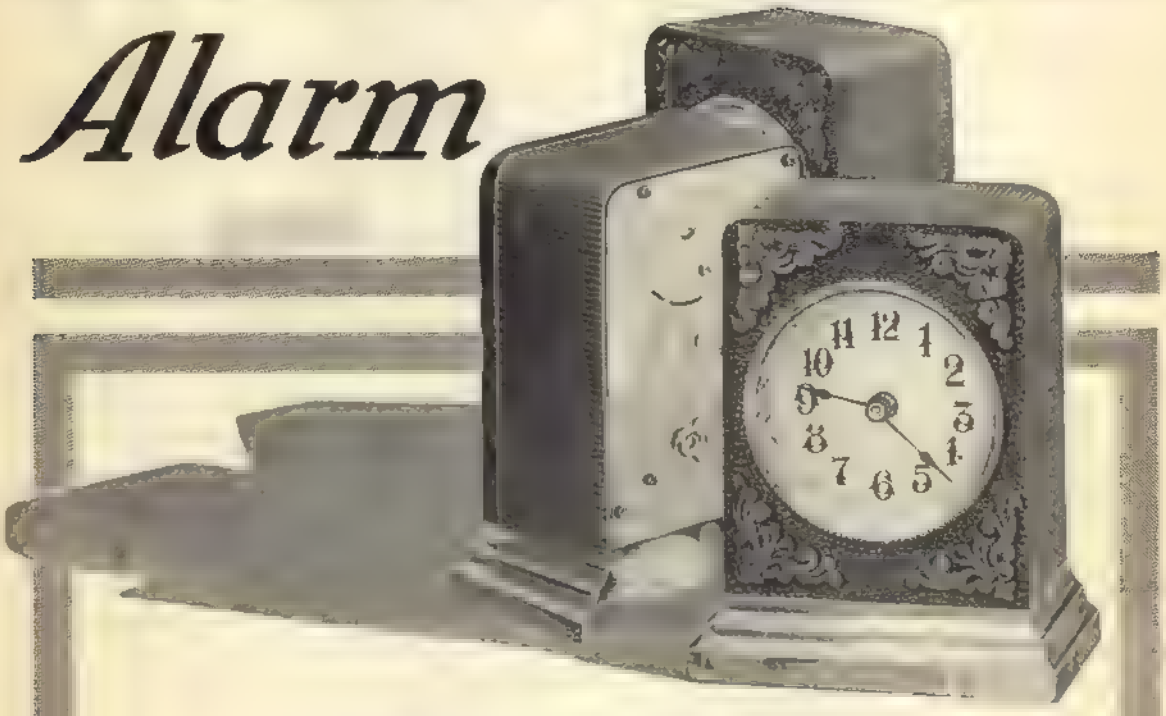


Rayfield Model F.

An important feature of Model F is its compactness. The float chamber can be turned in any direction and a carburetor installed and even more cramp space than that which will accommodate the Model D, as Model F is particularly suited for smaller cars. It is made in the following sizes: ¾ in., 1 in., 1¼

Sectional view of Rayfield Model D.

The IRONCLAD Alarm



"It Rings to Beat the Band."

IF we placed our IRONCLAD movement in an ordinary alarm case, the chances are it would *turn turtle* within a year. And if it lived to tell the tale, it would be to *tell a tale*—for it would get so *clogged* with dust, it could not tell the *truth.*

But it's CLAD in heavy IRON armor and it can't *keel over.*—It's stocky, sturdy, steady.—If it's *cleaned* every other year, there's *no telling* how long it'll last.

Packed 12 in a box with advertising matter. Dealers' names printed free on dials in lots of 24. Height 5 inches. Dial 2¾ inches. Weight 2½ lbs. Rings 35 seconds; can be shut off at will.

Stocked by 205 Hardware Jobbers.

The Western Clock Mfg. Co.,

La Salle, Illinois.

Why These Freezers Make More Money For The Dealer

Alaska and North Pole freezers give you the biggest profits, because—

1. The Alaska, by means of its aerating spoon dasher, makes ice-cream that is a revelation in lightness and delicacy of flavor. It is even better than buyers expect.

   The North Pole is the only **reliable,** low priced freezer made.
   Both freezers give unexpected satisfaction, both make for good will and continued patronage.

2. Our extensive and forceful advertising campaign this spring will reach four million women and will make sales larger than ever before.

Your own interest demands that you carry Alaska and North Pole freezers.

The Alaska Freezer Company, Winchendon, Mass.

Made in four brands: the "Snow Ball Steel Frame" (Triple Motion), the "Steel Frame" (Triple Motion), the "Double Quick" (Two Motion) and the "Frost King" (Single Motion).

THREE-QUARTERS SOLD!

Here's the point:
Every Steel Frame Freezer that you put in stock is three-quarters sold—through our advertising.

Nearly three million families are reading about the unbreakable stamped Steel Frame, the quick-freezing narrow can and the other exclusive Steel Frame features.

All you have to do, when they come into your store, is to show the Steel Frame Freezer, AND THE SALE IS MADE.

It's an easy seller and a good profit-maker.

That's what you want, isn't it? *WRITE US.*

RICHMOND CEDAR WORKS Manufacturers of Wooden Ware, Etc. **Richmond, Virginia**

Money Maker

Ask us for the strong convincing facts regarding this Compressed Air Egg Beater and Cream Whip that any child can beat an egg within 15 seconds or whip cream in one minute. It is a money maker everywhere. Write do-day.

BING MANUFACTURING CO.
Minneapolis, Minn.

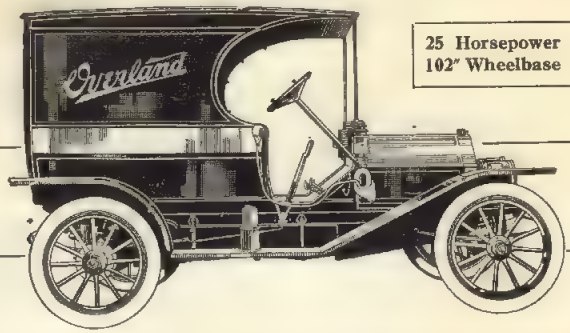
Superior Sanitary Churns

Interest every Butter-maker.

Why?

The **Barrel** is **Stoneware** finely glazed
The **Cover** is **Glass** ½ inch thick.
The **Sealing Ring** is **Rubber** and easily removed for washing.
The **Bearings** are **Steel**
We ship them crated, set up ready for use.
This is a SANITARY Age. May we interest you?

Superior Churn & Mfg. Co., Northville, Mich.



25 Horsepower
102" Wheelbase

OVERLAND DELIVERY CARS—WINNERS OF THE GOVERNMENT TEST —PRICE, $1,000

For two years, Overland Delivery Cars—like the one pictured above—have been used in the Government Mail Service in Indianapolis.

Each one has done the work of three horse-drawn vehicles. Each has covered from 60 to 75 miles daily—winter and summer, rain and snow—without missing a single trip. They have done this for two years and are doing it still.

Recently these cars won the Government test for automobile mail wagons, conducted at Philadelphia. There were entered in this competition practically all other makes of similar automobiles, and the Overland won against all of them.

Of all the myriad uses to which these cars are put the Mail Wagon test is the most severe.

Mail Wagons must make their regular trips, every day of the year, regardless of weather. There have been times at Indianapolis when the snow put a stop to all other traffic, but the Overland Mail Cars made their trips.

Mail wagons must be dependable—must always keep running—for the mails cannot be delayed.

They must cover from 60 to 75 miles daily, making innumerable stops.

They must be simple, so any man can operate them. They must be easy to care for, as the operators are usually novices. They must be practically trouble-proof.

Overland Delivery Cars, for two years, have met all these requirements. They have won against all competition in the Government Mail Wagon test. The cars which have done this are the best possible cars for any delivery purpose.

There are thousands of storekeepers and others who would be using these cars if they knew the facts.

A car which enables one man to do the work of three men and three horse-drawn vehicles is bound to be an economy.

We want to tell you the facts—to show you the cars—to demonstrate what you can do with them. Write us when to call.

Made with enclosed and open Express Bodies

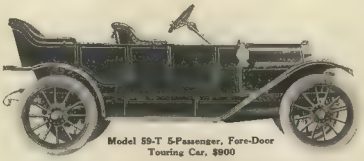
THE WILLYS-OVERLAND COMPANY

TOLEDO AND INDIANAPOLIS

Overland

BUY by comparison. For the more carefully you make your comparisons the more you will realize the worth of this $900 thirty horsepower five passenger touring car. Stick to facts. It will save you money. Write for a 1912 book. Ask for Book J 410.

The Willys-Overland Co., Toledo, Ohio



Model 59-T 5-Passenger, Fore-Door Touring Car, $900

Wheel base 106 inches; motor 4 x 4½; horsepower 30; Splitdorf magneto; transmission selective, 3 speeds and reverse; F. & S. ball bearings; tires 32 x 3½ Q. D; 3 oil lamps, 2 gas lamps and generator. Complete set of tools.

BOUGHT AND PAID FOR

A man may buy oil by the gallon, but he pays for it by the mile.

GARFIELD PARK AUTOMOBILE GARAGE
Distributor
THE POWERFUL GROUT

Chicago, Ill., Nov. 7th, 1911.

Wolverine Lubricants Company,
3506 South Morgan Street,
Chicago, Ill

Gentlemen:—

I used your Wolf's Head Oil in my Grout car, which proved so successful in winning the Economy Contest in conjunction with the Fifth Annual Reliability Run of the Chicago Motor Club.

Read→ It will undoubtedly be interesting to note that I used approximately 25% less gasoline than any other competing car which was in the 4000 pound class. ←Read

It means that the lubrication was practically perfect

At the end of the run, there was no appreciable evidence of carbon deposit or a sign of inefficient lubrication, either of which would have been a serious handicap in my endeavor to be returned the winner.

In closing, I can confidently recommend the use of Wolf's Head Oil to anybody requiring the most efficient and economical lubrication possible in addition to clean cylinders and spark plugs, as I have given it a most thorough practical test over thirteen hundred and fifty-six miles of all kinds of roads and in all kinds of weather.

Yours very truly,
(Signed) H. E. HALBERT.

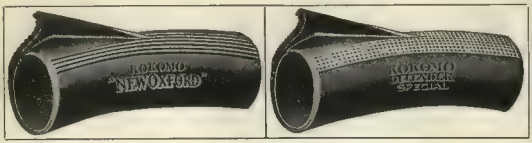
As we do not offer prizes for the use of Wolf's Head Oil in contests of any kind, this letter has some real meaning.

Wolverine Lubricants Co. of N. Y.

80 BROAD STREET, NEW YORK CITY

CHICAGO DETROIT PHILADELPHIA BOSTON ATLANTA SAVANNAH WASHINGTON

W. P. FULLER & CO., Agents for all Pacific Coast Cities, Australia and New Zealand



For Everyday Service Use the Popular

KOKOMO BICYCLE TIRES

Medium in Price
and Unequalled for Durability

KOKOMO RUBBER CO.

KOKOMO, IND., U. S. A.

1911 YALE Motorcycles

The steady increased sale of the 1911 Models is the best evidence we can offer that Yale Motorcycles are **best** and that the word Yale means QUALITY in every sense of the word, and QUALITY COUNTS.

We are closing agencies every day with pioneer dealers who have been through the mill and know.

You owe it to yourself to investigate these Quality Motorcycles before spending your money.

THE CONSOLIDATED MFG. CO.

1710 Fernwood Avenue :: :: TOLEDO, OHIO

F. C. Cornish, Eastern Representative, 219 Clinton Ave., Newark, N. J.

We also make Yale and Snell Bicycles, Hussey Handle Bars and Drop Forgings of every description.

EMBLEM

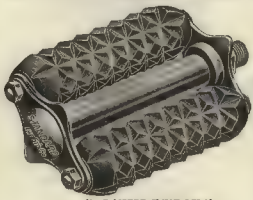
Motorcycles and Bicycles

Get our 1912 proposition
It is all right

EMBLEM MFG. COMPANY

ANGOLA (Erie County), NEW YORK

Standard Motorcycle Parts



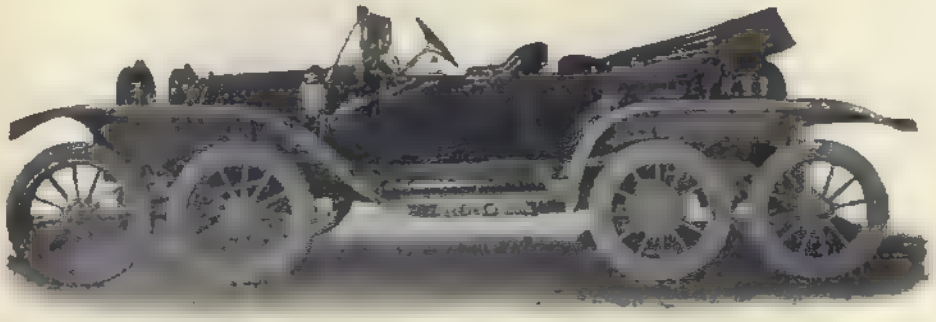
No. 3 MOTOR CYCLE PEDAL

are just a little bit better than anything else of the kind on the market. That's why machines that are **STANDARD** equipped sell quicker than others.

STANDARD PEDALS wear well. They are strong and light, and the deep corrugations in the rubber hold the foot firmly and absorb vibration. They are reversible, thus enabling the rider to get the fullest service from them. Write for details of our complete line, which includes **Spokes** and **Nipples, Bridgeport, Star** and **Standard Bicycle Pedals, Sager** and **Standard Toe Clips.**

The Standard Co., Torrington, Conn.

"The Reeves" Octoauto



This type and grade 40 H. P., four passenger, $3200

The easiest riding car in the world.

Built on the principle of a Pullman Parlor Car.

A truck in front, a truck in the rear.

An old and accepted principle to accomplish easy riding applied to the automobile.

The Octoauto rides more like a boat than an automobile.

Ultimate tire expense reduced more than one half according to tire authorities, while blowouts are practically eliminated.

Safety to passengers greatly increased.

Demonstration car has been driven some 3000 miles and is now in constant use and can be seen and ridden at any time in Columbus.

I claim the Octoauto rides with less shock and vibration and is more safe than any car of any make or price, and I stand ready to prove these claims by competitive demonstration in Indianapolis, Indiana, bearing all expenses thereof of competitors if found untrue.

The eight wheeled idea is applicable to any kind of vehicle and privilege to use same may be had. Therefore, if interested, write your automobile manufacturer or myself.

For further information or circular, address

M. O. REEVES, Columbus, Indiana

Pres. Peoples Saving & Trust Company **Vice-Pres. Reeves Pulley Company**

36 x 4 in. in size, demountable rims and a new cellular radiator of the honeycomb type. Dual ignition is provided with magneto and batteries, and complete equipment with top, windshield and speedometer is included at the list price of $1850. The latest innovation and one which is now being more and more demanded in high-priced cars is the use of a positive self-starter of a compressed air type operated by a push button on the dash.

The new four cylinder 36 h. p Everitt is a remarkably attractive car of convenient size and unusual smartness of appearance and ability. This chassis has a 115-in wheel base with 34 x 4 in. tires, demountable rims, cellular radiator of the honeycomb type, and dual ignition with magneto and batteries. Complete equipment of top, windshield and speedometer is also included at the list price of $1500, and like the new Everitt "Six," this car is provided with a positive self-starter of the compressed air type, operated by a push button on the dash.

Among the refinements and improvements in the 1912 models are a larger crank shaft, a system of enclosed valves, rendering them dirt and dust proof and contributing to greater quietness, a larger pump and intake and exhaust water connections, with a larger and roomier body and heavier frame of unusually deep channel section and an enclosed system of brakes thoroughly protected against mud and dust. Brake pulls have also been simplified and the springs have been carefully developed, with the result that the new cars have been given much easier riding qualities. The carburetor has also been the subject of much experiment and careful testing, with the result that the final design adopted gives more complete vaporization, particularly at low speeds and assists in the easier starting of the engine. The push rods have been increased in size, both as to length and diameter, and by the insertion of fibre seats of improved design are extremely quiet in action. The self-starter used on these models is on a new principle. This feature is one of William Kelly's latest inventions and has been found to combine the good qualities of other similar devices with none of their objections.

Still another interesting feature of the 1912 line is the factory announcement that the price of the Standard Everitt "30" will be reduced to $1250. This figure includes complete equipment with magneto, top and windshield, together with many detailed improvements which will be incorporated in the 1912 models.

THE "REEVES" "OCTOAUTO," OR EIGHT-WHEELER

M. O. Reeves, of Columbus, O., is the inventor and builder of the car illustrated above. It is claimed that this construction not only breaks the force of all jars and jolts one-half, [illegible] the extra wheels double the amount of springs can be employed, reducing [illegible]. The manufacturer also claims less expense for tire maintenance, as each tire carries only one-half the load it would have to carry on a four wheeled car, and thus should give better service and show a greater mileage.

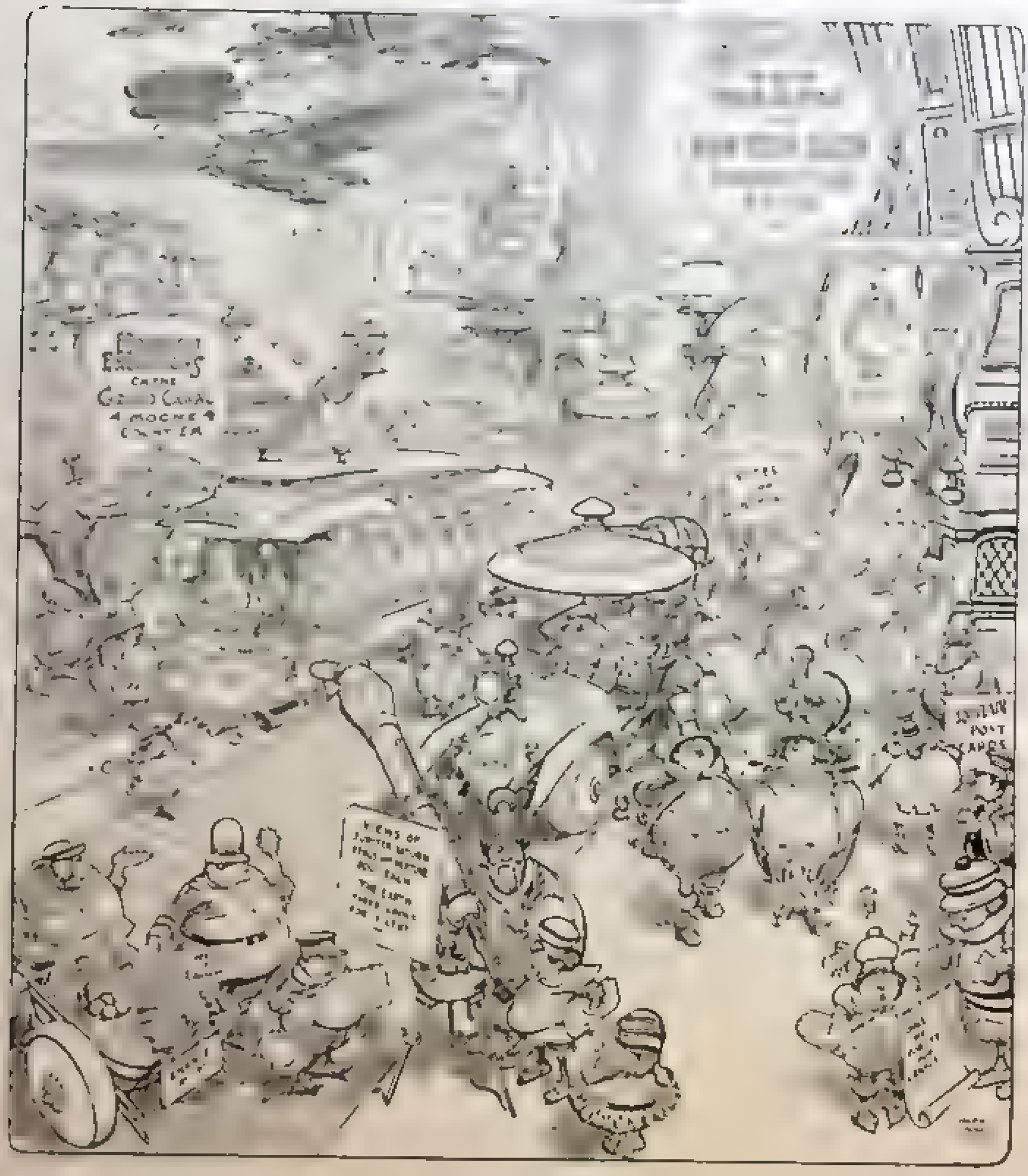
In this machine no change whatever is made from the ordinary four-wheeled construction in the motor, transmission, rear system, body, springs, radiator, steering column, or control levers nor in their relation to each other. The change consists in extending the main frame 19 in. at a point just in front of the clipping of the rear springs.

At the same place on the springs where the front and rear axles were mounted, brackets are attached which carry cross shafts, and on each end of these two cross shafts pivots or boxes are mounted, these pivots having extensions on their sides to which 38 in. leaf springs are solidly clipped. These pivots or boxes hold the springs and bed to them in perfect alignment with the body of the car, but allow them perfect freedom in their rocking action.

At each end of these 38 in springs an axle is clipped (four in all). The two front axles and the extreme rear axle are all the same kind being regular steering front axles, such as are now used on all automobiles. The six wheels on these three axles are therefore all steered, while the driving wheels, which are mounted upon a regular shaft-driven rear axle, which is the second axle from the rear, is not steered and the whole car, in rounding a curve, pivots about this driven or second axle from the rear.

THE MAYFLOWER PALACE DINING ROOM

[redacted]



FIRST AUTHENTIC PICTURE FROM THE PLANET MARS

SHOWING THE INHABITANTS TO BE A BEARDED, INTELLIGENT AND HIGHLY CULTURED RACE

BURGLARS.
MEAT TRUST
EGG TRUST
BURGLARS'
MILK
ICE TRUST
AND BURGLARS.
TWO YEARS

POTTER HOTEL
SANTA BARBARA
Milo M. Potter, Manager

AMERICAN PLAN ONLY
Rates $4.00, and upward

CALIFORNIA, with its infinite
variety of scenic beauty, offers n
other combination of
so to compete with Santa Barb
the state has a proud
cities as Potter Hotel commands
with its accessible
ple Isle is in the
woods [illegible] the
one of
[illegible]
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"Bishop Inferior Upon Monster of the Episcopal Church. "DEAR LADY FRANKLY, I CANNOT PERSUADE MYSELF THAT IT WOULD BE SUCH A VERY WOMANLY

AND WHAT MAY I ASK, IS YOUR REASON FOR OPPOSING IT?"

"WELL, DEAR LADY, I CANNOT BUT THINK THAT IF WOMEN WERE TO VOTE IT WOULD MAKE THEM, LET US SAY—A LITTLE PE—PE MASCULINE."

"OH, I DON'T KNOW. IT HAS NEVER HAD THAT EFFECT UPON THE CLERGY."

The

Remington Typewriter

is the

Perpetual Pioneer

The *No. 10 and No. 11 Visible Remington Models* are the latest expressions of Remington leadership. They represent the sum total of all typewriter achievement—past and present

They contain every merit that the Remington has always had, and every merit that any writing machine has ever had

They contain in addition, new and fundamental improvements that no typewriter has ever had; among them the *first column selector*, the *first built-in tabulator*, and the *first key-set tabulator*. The Model 11 with Wahl Mechanism is also the *first Adding and Subtracting Typewriter*. These improvements are the latest contributions to typewriter progress, and they are Remington contributions—every one

The Remington, the original pioneer in the typewriter field, is the present day pioneer in all new developments of the writing machine

Remington Typewriter Company
Incorporated
New York and Everywhere

IMPORTANT ANNOUNCEMENT

THE REMINGTON ARMS COMPANY and THE UNION METALLIC CARTRIDGE COMPANY, heretofore allied in fact but not in name, will hereafter be known directly to the public as

REMINGTON ARMS—UNION METALLIC CARTRIDGE CO.

AND ALL DEALINGS WILL BE CONDUCTED UNDER THIS NEW TITLE

The Main Office will be at

299 Broadway, New York City

The famous trade marks

Remington

UMC

will be combined into one, and supplanted by the device

REMINGTON UMC

The purpose of these important changes is that the associated interests of REMINGTON UMC may be more directly represented to the trade and shooting fraternity in all the progressive plans and activities outlined for the future.

Remington-UMC —**The Perfect Shooting Combination**

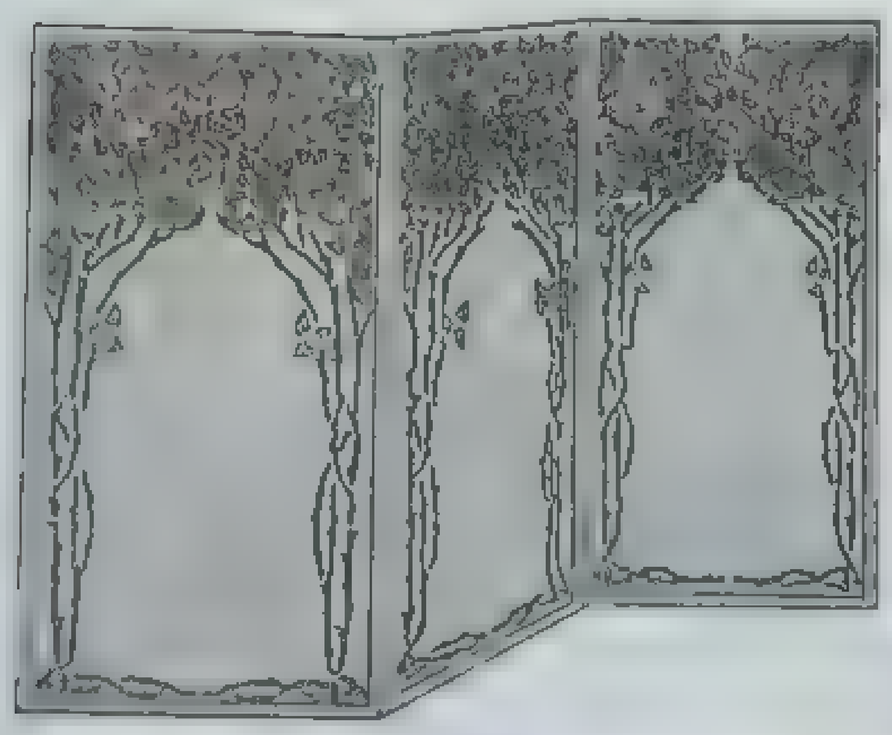
Remington Arms—Union Metallic Cartridge Co.
299 BROADWAY, NEW YORK CITY

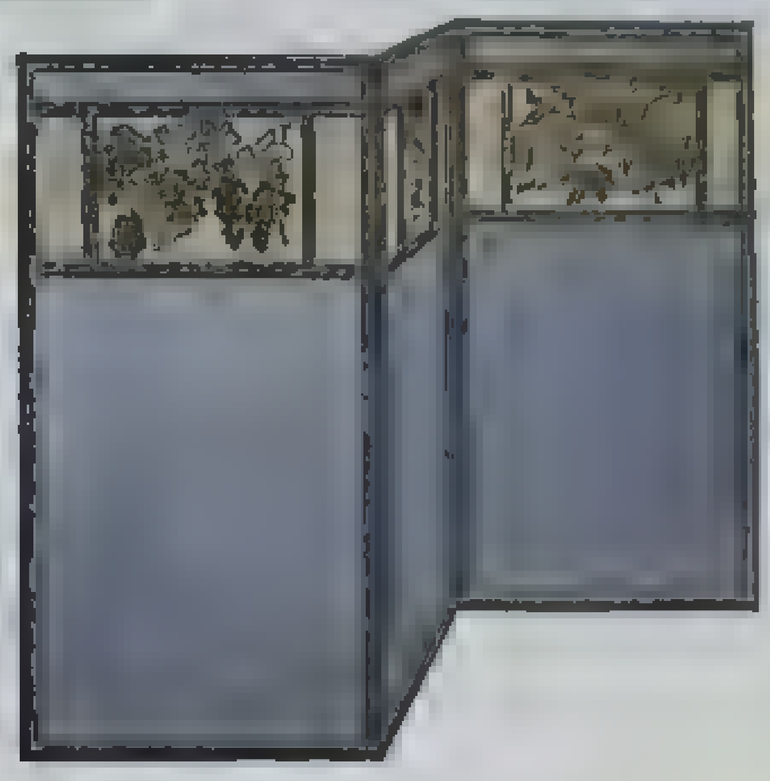
LIFE'S MODEL SPEED LUNCH

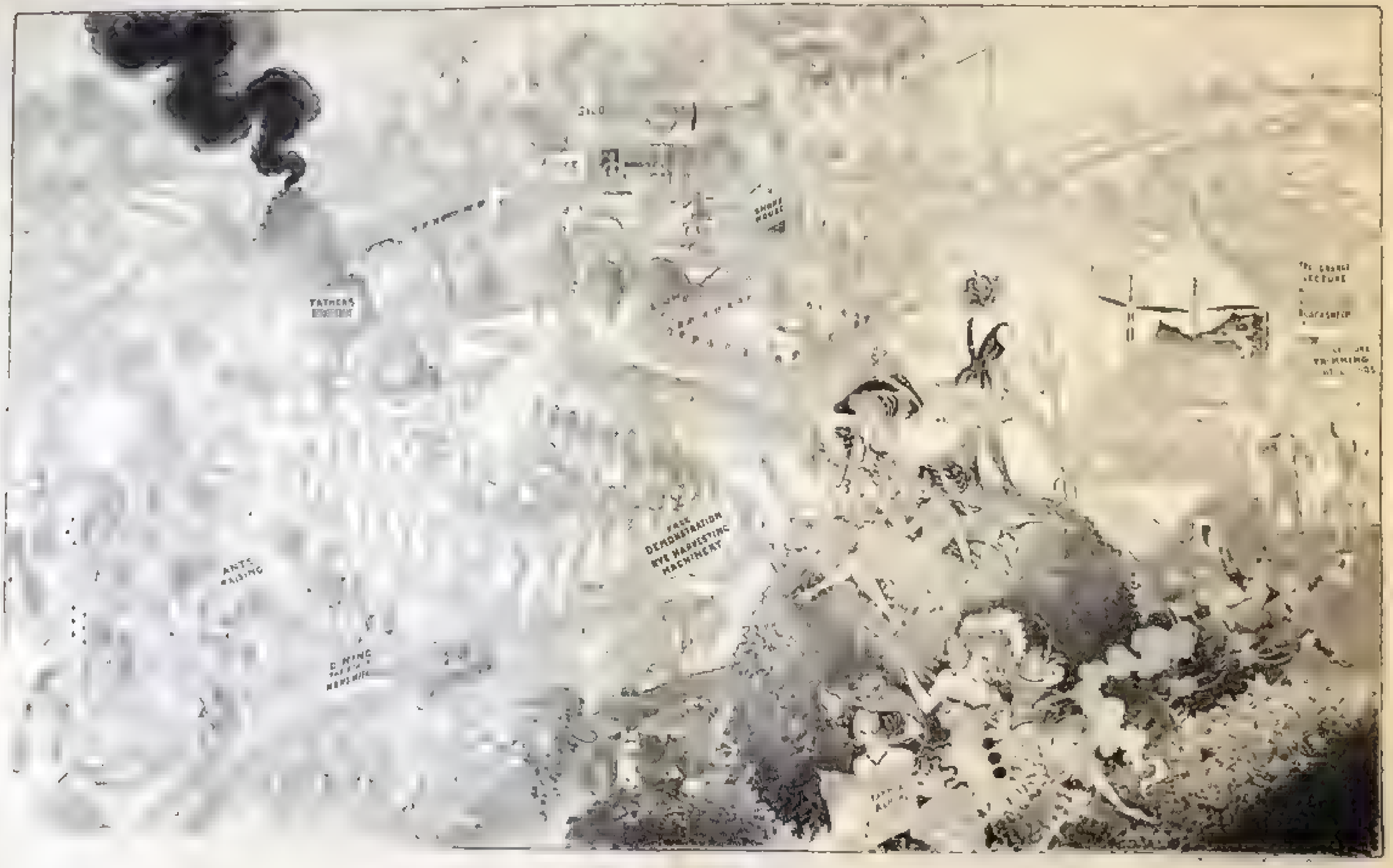
A FULL COURSE DINNER CARRIED IN ONE CARRY

New Screens for Any Room

By Nelly Snead Macdonald







Sowing the Wild Oat

HARPER'S WEEKLY

EDITED BY
GEORGE HARVEY

October , 1911 HARPER [illegible] Price [illegible] Cents

Remember This
There's $10,000,000 back of this project. "If you are willing to work you win."

Good Cows and Alfalfa Bring Immediate Returns

SEND FOR BOOKLET

A Last Chance to Get Good Land Cheap

$15.00 down that's all
$11.00 a year that's easy

The Big Bonanza Ranches of the Sacramento Valley have at last been broken up. Now men of small means have the chance of a century in this vast, fertile valley. Here you pay only $15 an acre down—the rest spread over ten years—$125 an acre in all. With a water supply assured the entire growing season 20 to 80 acre tracts. Why pay more elsewhere for the same kind of land? This low price and easy terms gives the man of small means a chance. He can make the land pay for itself long before the last payment is due.

Our Small Sacramento Valley Farms Pay

Last year, Mr. W. F Burt—a former drayman—made over $2,600 on 7 acres—besides supporting his family. Burt's farm paid him nearly three times his first cost in one year! Many others are making equally amazing profits on our small, low-priced farms.

Sacramento Valley Irrigation Company

For Information and Free Book write

H. L. HOLLISTER & CO., Willows, California

345 Fourth Ave. Pittsburgh, Pa. | 137 S. La Salle St. Chicago, Ill. | 506 Central Bldg. Los Angeles, Cal. | 412 Market St. San Francisco, Cal.

Comfort, Independence Health and Wealth

In the Puget Sound Country at Norwood Acres Settlement, Mason County, Western Washington, the most beautiful and fertile part of the far-famed Puget Sound Country. Here you get the most delightful all year climate on earth and the grandest scenery on the continent, excellent hunting, fishing and boating.

What You Can Do On 20 Acres of This Land

It is unnecessary at Norwood Acres to assume the burden of caring for, fretting over and paying taxes on a quarter section when 20 acres can easily be made to pay handsome returns. Fifteen acres of our land will pasture 15 cows, producing, in milk at the creamery between $75 and $100 per month, and this on uncleared land. Five acres planted to potatoes will raise 50 tons, which means in money about $750 to $1,000. These two items alone mean an income of about $2,000 per year, but there are poultry, pork, brush-fruit, orchard, bee-hives, strawberry beds, pigeon loft and other paying departments to hear from to bring the total income to $2,500.

When it is understood that each one of these Norwood Acre farms, when only partially cultivated, will yield a good living for a family, and when fully under intelligent cultivation, will mean a fortune for each cultivator, and can be bought now at a price representing less that the cost of a suburban 40-foot lot, the fact will be plain that we have the place for *you*.

A large lumber and shingle mill on the tract furnishes building materials cheaply. Employment is offered many in clearing land, building houses, cutting shingle bolts, etc.

We Can and Will Help You—Be sure to get our handsome book *"Much from Little"* sent free to any address. It tells about the Ideal Life in the Ideal Country.

Norwood Land Company

915 White Building, SEATTLE, WASH.

References by Permission The Scandinavian American Bank and The Mercantile Bank, of Seattle The State Bank of Shelton, Wash.

Don't forget to mention The Pacific Monthly when dealing with advertisers. It will be appreciated.

Send one dollar (Canadian $1 13, foreign $1 26) with your name and address and get LIFE for three months. Open only to new subscribers. Offer not. No subscriptions renewed at this rate.

Smokers Ahoy!

It is estimated that there are almost as many smokers in this country as there are readers of LIFE. However this may be, the next number of LIFE is the Nicotine Number, and we invite your attention to its superlative contents.

It has a bouquet all its own.

The wrapper, in colors, is by Anderson. You'll know that it covers the Smoker's Number of LIFE the moment you see it. It is entitled "My Lady Nicotine."

This Number will smoke right through to the end without going out. It burns clear, is mild and pleasant to the taste and stimulates your sentiments and your diaphragm rather than your nerves

Every leaf is selected and grown on our own plantation.

A prime pictorial product. And though it will take you only an hour to smoke up its contents, the price as usual is only ten cents. All newsdealers, next Tuesday. Order ahead.

On all News-stands
every Tuesday
Ten cents

SPORTS OF ALL NATIONS

RAIDING SARDINES IN NORWAY

Velvet

THE SMOOTHEST TOBACCO

Coming down the pike of life one good fellow tells another about Velvet—the smoking tobacco that has been aged in the leaf over two years—producing a mellowness that is simply great—a smoothness hitherto unknown. Velvet is devoid of harshness and once you fill your pipe and puff this goodness you quickly appreciate our "time process" of maturing this leaf. This good smoke is waiting for you at your dealer's. Don't neglect.

SPAULDING & MERRICK,
Chicago.

10c TINS

AT ALL DEALERS

With Victor Owners

A page devoted to the interests of Victor owners and to help them to a better appreciation of Victor music and to enable them to get the utmost enjoyment from their instruments

Every Victor owner ought to be a member of the Victor Record Society—a society of good books—a society as elevating as entertaining. The Victor Record is a library of the world's best music.

Victor Records are masterpieces of music and worthy to rank with the greatest masterpieces of literature and art. They may justly be compared with the greatest paintings of the old masters—Michael Angelo, Raphael, Rubens.

They are music at its very best. The greatest artists' conception of the world's greatest compositions.

The [illegible] you have at your home with the Victor. A library of musical gems that is a constant delight. Another [illegible] a library of [illegible] and [illegible] a delight [illegible]

The ever popular "Miserere"

By Caruso, Alda, and Chorus of the Metropolitan Opera

Il Trovatore—Miserere, Act IV **Verdi**

Victor Red Seal Record [illegible] Price $2.50

Verdi's "Il Trovatore" is not exactly the favorite of the cultured few, but appeals to all classes of music lovers and may rightly be called a popular opera, and certain of its numbers, especially the beautiful "Miserere" scene, will never be forgotten by those who hear it.

The scene is laid in the palace of Aliaferia, where Manrico, [illegible] is confined in the [illegible] awaiting execution. Leonora has come to be near her lover and she is terror stricken at the solemn tolling of a deep-toned bell and the mournful chorus of prisoners rising from the [illegible] below. [illegible] the [illegible] the beautiful air of the Troubadour, Manrico, who is in the prison, followed by a joyful cry [illegible] from [illegible]

These fragments, at first given separately, are soon combined and heard together, forming a most impressive scene of touching beauty.

The rendition which Mme. Alda, Signor Caruso, the Metropolitan Opera House Chorus and the Victor Orchestra have given of this famous number cannot be described. It is truly a superb specimen of the improved Victor [illegible] and must be heard to be appreciated.

The [illegible] Leonora, [illegible] Manrico, [illegible] Miserere, [illegible] Caruso, [illegible] Metropolitan Opera Chorus, [illegible] Victor Orchestra, [illegible] Victor Record [illegible]

You may have heard the Miserere [illegible] but you have never heard it [illegible] Victor

The famous Dagger Dance from Natoma

By Victor Herbert's Orchestra

Natoma—Dagger Dance, Act II **Herbert**

Victor Red Seal Record 70010. Twelve-inch, $1.25

To [illegible] Victor Herbert [illegible] American opera [illegible] of [illegible] and [illegible] that one [illegible] Dagger Dance, when [illegible] Victor Herbert's Orchestra [illegible] personal [illegible]

[illegible] Dance of Natoma which Victor Herbert has [illegible]

The number occurs in Act II at a festival in the public square of Santa Barbara. Various Spanish and Indian dances are given by the people, when Castro [illegible] forward and throws [illegible] dagger, one of the pure examples of [illegible] clothes and one to pick her [illegible] the [illegible] of the old California [illegible] gives the challenge and the wild and [illegible]

[illegible] one of the most striking numbers in the [illegible] you'll find its weird melody as fascinating

Two favorite soul-stirring hymns

By American and English organizations

Throw Out the Life Line
Harry Macdonough and Haydn Quartet
Onward Christian Soldiers
Westminster Cathedral Choir with band

[illegible] Price $1.25

As you listen to those two beautiful sacred hymns, "Throw Out the Life Line" and "Onward Christian Soldiers," sung by Harry Macdonough and the Haydn Quartet and by the Westminster [illegible] Choir of London, under the [illegible] personal [illegible]

[illegible] Dr. Ford who wrote the famous "Life Line" received his [illegible] [illegible] suggested the [illegible] and the words and melody that [illegible] most [illegible] why this hymn has become so much used in evangelistic services. And when sung by Mr. Macdonough and the Haydn Quartet, the [illegible] the best [illegible]

The "Onward Christian Soldiers" used by the [illegible] London choir is not the musical version familiar to Americans. [illegible] words are [illegible] and [illegible] the [illegible] and [illegible] the [illegible] Victor [illegible]

These two splendid [illegible] on both sides of one record forming an unusually attractive selection. Their rendition on the home [illegible] with such keeps us firmer footed in the light.

A welcome revival of that successful operetta, "Florodora"

Gems from "Florodora" **Victor Light Opera Company**

Victor Single-face Record 31817. Twelve-inch $1

Who doesn't like to have light back the memory of favorite operettas? Their recent revivals would seem to indicate that they never lose their charm, and the stirring medleys by the Victor Light Opera Company will revive and keep them alive in the home. The charming "Florodora" has been an metropolitan success both here and abroad, and an unusually brilliant and attractive [illegible] is presented in a masterly manner by the Victor's [illegible]

The [illegible] begins with [illegible] of the peerless Florodora [illegible] of the popular "Shaw." [illegible] the [illegible] whom Sextet [illegible] a [illegible] range of musical comedy, is then sung, followed by the [illegible] "Mary Man" and the medley closes with the [illegible] worthy of a grand opera, "Island of Love."

This rendition of musical gems is a really superb specimen of tabloid opera and is sure to bring new pleasure to [illegible] who witnessed the performances of [illegible] and to [illegible] who may be [illegible] with its charming [illegible]

If you [illegible] who are not [illegible] to [illegible] we would be [illegible] to [illegible] Victor [illegible] all [illegible] the [illegible] sections, we have prepared an attractive booklet containing a descriptive list of these numbers together with pictures of the artists who make the records which we will gladly send on request to any address.

New Victor Records recently issued

Victor Single-faced Records

10-inch, 60 cents, 12-inch, $1

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Victor Purple Label Records

10-inch, 75 cents, 12-inch $1.25

[illegible]

Victor Double-faced Records

10-inch, 75 cents, 12-inch $1.25

[illegible]

Victor Red Seal Records

Luisa Tetrazzini, [illegible]

[illegible]

Alma Gluck [illegible]

[illegible]

Reinhold Von Warlich

[illegible]

George Hamlin, Tenor

[illegible]

Ricardo Martin, Te

[illegible]

Mischa Elman, Violin

[illegible]

Daniel Beddoe

[illegible]

Jeanne Gerville-Reache, Contralto

[illegible]

G. Marco Sammarco

[illegible]

Otto Goritz,

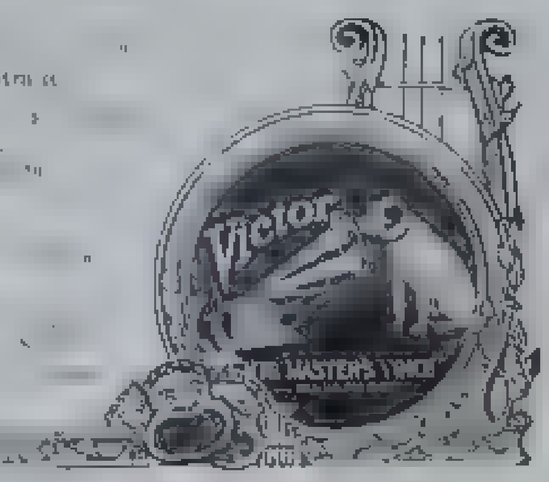
[illegible]

Nicola Zerola,

[illegible]

Always use Victor Records played with Victor Needles—there is no other way to get the unequaled Victor tone.

Victor Talking Machine Co.
Camden, N. J. U. S. A.



These world's greatest singers make records only for the Victor

The world's *greatest* singers! The greatest tenors; the greatest sopranos; the greatest contraltos, the greatest baritones; the greatest bassos. Not *among* the greatest, but *the* greatest of all nationalities.

Caruso, the greatest of all tenors
McCormack, the greatest Irish tenor
Martin, the greatest American tenor
Dalmores, the greatest French tenor

Scotti
Sammarco
Battistini
Ruffo } the greatest Italian baritones

de Gogorza, the greatest Spanish baritone
Renaud, the greatest French baritone

Schumann-Heink, the great[est] contralto
Homer, the great[est] contralto
Gerville-Réache, the great[est] French contralto

Melba, the greatest of all sopranos
Tetrazzini, the greatest Italian soprano
Eames }
Farrar } the great[est] American sopranos
Calvé, the greatest French soprano
Gadski, the great[est] German soprano
Sembrich, the greatest Polish soprano
Michailowa, the greatest Russian soprano

Journet }
Plançon } the greatest French bassos
Witherspoon, the greatest American basso

These famous artists—universally acknowledged *the* greatest, and commanding the highest salaries—make records *only for the Victor* because *the Victor* brings out their voices as clear and true as life itself

Victor Talking Machine Co., Camden, N. J., U. S. A.

To get best results, use only Victor Needles on Victor Records

And be sure to hear the Victor-Victrola

New Victor Records are on sale at all dealers on the 26th of each month

THE FASHION DEPARTMENT

CONDUCTED BY GRACE MARGARET GOULD

BLACK MOHAIR BATHING-SUIT, TRIMMED WITH THE FASHIONABLE BLACK-AND-WHITE STRIPED SILK

Every girl who expects to visit the beaches this summer will want a stylish, up-to-date bathing-suit. Bathing-suit fashions are simple this year, being designed primarily for convenience and comfort, but, of course, with thought toward smartness. The bathing-suit pictured on this page is in the simple style so fashionable this season. The skirt is plain, with a panel front extending up onto the waist, and in the back it is made with inverted plaits. Black sateen or mohair, trimmed with black-and-white striped silk, are good materials for this suit. If preferred, the trimming may be of colored striped silk. A new bathing cap is a small bag made of the trimming material and attached to a long, silk cord, which is dropped on the right shoulder and again under the left arm at the belt. The bag should be finished with patent clasps, so as to make it water-tight as well as a safe place to keep one's bath-house key, handkerchief, or anything one wants to have handy.

No. 1797—Bathing Suit with Princesse Panel

Pattern cut for 32, 34, 36 and 38 inch bust measure. Quantity of material required for medium size, or 36 inch bust: eight and three-eighths yards of twenty-two-inch material, or six yards of three-inch material with one-and-one-eighth yards of contrasting material, three-eighths yard wide for trimming. The price of this pattern is ten cents. With it is included a pattern for bloomers.

Living Loveliness

In beauty of face, what appeals most directly and most intensely to our admiration is the beauty which glows and beams with life and animation—in a word, the beauty that is natural.

A chief element in the realization of such beauty is a dainty complexion and the greatest aid to a lovely complexion is

Pears' Soap

This is such a universally accepted truth as to be almost proverbial.

The most beautiful women of the last hundred and twenty years have declared it to be matchless for the complexion.

Being all pure soap, possessing special emollient properties that soften, refine and beautify the skin, it is indisputably

The Beauty Soap of the World

OF ALL SCENTED SOAPS PEARS' OTTO OF ROSE IS THE BEST

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Life's Suffragette Contest

Notice to Contestants

This contest closed on December 31, 1910, no manuscripts received after that date being considered.

On account of the number of manuscripts still to be read by the judges, we are unable, at this writing, to give the date of the prize award.

But it will be as soon as possible.

XXVIII

National Hymn

God Save the King—
God Save the Man
My country, 'tis of thee,
Bad land of Suffragee,
Of thee we sing
Land where the women vote,
"Equal Pay" is the note,
Man—"Watch your hat and coat,"
She's on your track!

My native country thee,
Land of the Suffragee
Thy name I hate.
I hate to think that Eve
Set her cap to deceive
Adam—I do believe
She was a suffragette.

Let music swell the breeze
And ring from all the trees
Beware of HER.
She'll make you stay at home,
While she goes to her throne,
Men will leave you alone,
O Man, Beware!

Our father's God to thee,
Author of Suffragee
Of Her we sing.
In years to come that blight,
No babes to make home bright,
Protect us from this plight,
Great God our King.
A-Men.

MAYME C. HUBERT.

XXIX

With Apologies to Mr. Henry James

If happily one were to give and moreover write the reason, or to quote exactly: "The best reason, or reasons, why any man should not marry a suffragette," one would, one supposes, since the subject seems to allow of a somewhat bald frankness, not demanding the finer, nicer shades of expression, feel compelled to declare it as one's honest and, one regrets to say, unflattering opinion (for which opinion there are various most excellent arguments which one might, in one's usual manner, did space permit and were the theme not too heavy for one's pen, and were the time more propitious, here set forth) that just "any man" will never, obviously enough, or as at any rate it would seem, be able to persuade a suffragette—that is to say, a sensible, yes, more, a wise woman, he will never (I was about to have written) be able to persuade her to accept, all things considered, him.

RUTH LEE.

XXX

Why Any Man Should Not Marry a Suffragette

Webster says that a suffragette is a woman who is an advocate of the suffrage by women.

A suffragette is, therefore, an advocate.

But Webster says that an advocate is one who pleads the cause of another.

A suffragette is, therefore, a woman who pleads.

Again, Webster says that to plead is to argue.

A suffragette, therefore, delights in an argument.

According to Webster an argument is a quarrel, and to quarrel is to disagree violently.

Therefore, a suffragette is given to the habit of using violence.

Again, Webster declares that violence is an assault, an outrage, or a crime.

It is plainly seen that a suffragette will, therefore, commit an assault, an outrage, or a crime.

An assault is an attempt to do bodily injury to another.

To outrage is to insult indecently, or to use wanton abuse.

To commit a crime is to violate the law or to perform an offence against morality or the public welfare.

Therefore, a man who marries a suffragette must expect that she will do him some bodily injury; that he will be insulted indecently, and that she will commit crimes which are in violation of the laws of morality and of the public welfare.

He must also expect her, since she is accustomed to use wanton abuse, to be unchaste and even lascivious.

Will a man in his senses face all this, run the risk of the contamination of his sentiments, of public disgrace and even of his life?

Love is blind and men will marry suffragettes, but let him beware and think well before he slips his head into the noose and allows Inevitable Fate to draw it tight.

W. L. PRESTON.

XXXI

Jim's Decision

The hour was late, the night was dark,
As Jim Smith sauntered through the park;
His thoughts were bent on Emma Jane
Who'd tried that night to make it plain
That he was all her heart's desire
While modest Jim grew red and shyer.
"I know she meant it well," said he,
"For everybody will agree
That I for certain need some one
To keep the home since mother's gone—
But, I don't know——

"It seems to me that Emma Jane
Is always tryin' to explain
About the rights the women need
By ballot box to go their speed
In workin' out a mighty plan
For doin' things now done by man.
She's strong for votin', says she'd work
Around the polls from dawn till dark—
If she just got a chance she'd be
A power in this community—
But, I don't know——

"Her mother's old and needs her care,
But, somehow, she is never there
When I call 'round just by surprise
To get a glimpse of her bright eyes.

(*Continued on page 16*)

WHEN WOMAN USURPS MAN'S RIGHTS

This Confection Costs Least! It Benefits Most!

If everybody chewed it, all teeth would be white. All breath would be right. Everyone would approve of it because everyone would benefit by it.

Get the goody that's good for you!

Look for the Spear! The Flavor Lasts!